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TRANSCRIPT OF RECORD

Supreme Court of the United States

OCTOBER TERM, 1939

No. 536

ETHYL GASOLINE CORPORATION, EARLE W. WEBB AND JOHN COARD TAYLOR, APPELLANTS,

vs.

THE UNITED STATES OF AMERICA

APPEAL FROM THE DISTRICT COURT OF THE UNITED STATES FOR THE SOUTHERN DISTRICT OF NEW YORK

FILED NOVEMBER 16, 1939.

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IN UNITED STATES DISTRICT COURT FOR THE SOUTHERN DISTRICT OF NEW YORK

Equity No. E. 84-321

UNITED STATES OF AMERICA, Petitioner,

v.

ETHYL GASOLINE CORPORATION, EARLE C. WEBB, and JOHN COARD TAYLOR, Defendants

PETITION—Filed February 19, 1937

To the Honorable the Judges of the District Court of the United States for the Southern District of New York, in Equity:

The United States of America, by its attorneys, brings this suit in equity against Ethyl Gasoline Corporation, Earle C. Webb, and John Coard Taylor, defendants, and alleges:

1. Defendant Ethyl Gasoline Corporation is a corporation organized and existing under and by virtue of the laws of the State of Delaware, and having its principal place of business at 135 East 42nd Street, in the City and State of New York. One-half of its capital stock is owned by the Standard Oil Company (New Jersey), and the remainder is owned by General Motors Corporation and E. I. du Pont [fol. 3] de Nemours Company. Defendants, Earle C. Webb and John Coard Taylor, are president and vice-president in charge of sales, respectively, of Ethyl Gasoline Corporation. Defendant Webb is a citizen of the State of Connecticut and resides in the City of Greenwich in that State. Defendant Taylor is a citizen of the State of New Jersey and resides in the City of Montclair in that State.

2. The purpose of this suit is to enjoin and restrain defendants and each of them, from further violations of the Act of Congress of July 2, 1890, known as the Sherman Anti-trust Act.

3. The unlawful combination, conspiracy, and monopoly hereinafter described has operated, and has been carried on in part within the Southern District of New York, and

many unlawful acts pursuant thereto have been performed by defendants and others in said district. The interstate commerce in gasoline hereinafter described is carried on in part within said district.

4. Defendant corporation has been for a number of years continuously engaged in the production and sale of a substance (hereinafter referred to as "ethyl fluid") for use in increasing the octane, or anti-knock, rating of motor fuel, principally gasoline. Said ethyl fluid consists principally of tetraethyl lead, which said substance has the effect, when a relatively minute quantity thereof is mixed with gasoline, of reducing or preventing the "knocking" which sometimes takes place in the course of the combustion of ordinary [fol. 4] gasoline in automobile motors of high compression. Defendant corporation is the sole producer of ethyl fluid in the United States, being or claiming to be the owner of exclusive rights under certain letters patent of the United States purporting to cover the manufacture, use and sale of said ethyl fluid. No other substance of like character is manufactured or sold. The use of improved refining processes, such as so-called "cracking" processes, to raise the octane rating of gasoline sufficiently to meet prevailing competitive standards involves the acquisition of expensive patented apparatus and is so costly that said processes are not practically competitive with the use of ethyl fluid.

5. Defendants do not manufacture, refine or sell any gasoline, or mix ethyl fluid with gasoline, and do not own any part of, or interest in, any of the gasoline which is treated with ethyl fluid.

6. More than 85% of all gasoline sold in the United States which is processed so as to obtain a high octane rating is treated with ethyl fluid. Approximately 70% of all gasoline manufactured and sold in the United States is treated with ethyl fluid. By reason of these facts, and by reason of the control exercised by defendant corporation over the manufacture and sale of ethyl fluid, said defendant possesses the power, unless the activities hereinafter described are restrained, in effect, to control and regulate the price and the manner of sale of the greater part of all gasoline sold throughout the United States.

[fol. 5] 7. Gasoline is manufactured from crude petroleum at refineries located in various states of the United States,

principally the States of Texas, Oklahoma, California, Illinois, Indiana, Missouri, New Jersey, Pennsylvania, and New York. The greater part of all gasoline manufactured at such refineries, and the greater part of all gasoline treated with ethyl fluid, as aforesaid, is sold and transported in interstate commerce from the States in which such refineries are located into each of the other States of the United States, including the State of New York and the Southern District thereof, wherein such gasoline is sold for consumption. Said gasoline is sold by the refining companies in part through wholesale and retail outlets owned or controlled by them, and in part to so-called jobbers for resale to retail dealers and consumers.

8. Jobbers usually own and operate bulk storage plants conveniently located so as to serve such gasoline, by their tank trucks or tank wagons, to retail service stations, either owned or operated by them, or independently owned or operated by retail dealers, in the various marketing territories served by them. There are approximately 12,000 jobbers of gasoline doing business in the several States of the United States, who distribute a great part of all gasoline sold and distributed in the United States. The greater part of all gasoline, and of the gasoline treated with ethyl fluid, as aforesaid, purchased by said jobbers is purchased by [fol. 6] them in tank car quantities, and is delivered to them from the States in which said gasoline is refined to the States in which said jobbers are engaged in business, and a large part of such gasoline sold by jobbers is sold and distributed by them in interstate commerce from the States in which their said bulk storage plants are located to service stations located in other States.

9. Defendants, each well knowing all the matters of fact hereinbefore alleged, have been engaged in an unlawful combination, conspiracy, monopoly, and attempt to monopolize, in violation of the Sherman Antitrust Act, whereby said defendants have adopted and put into effect certain licensing policies and practices hereinafter referred to, and have attempted to control and regulate, have in fact controlled and regulated, and have unlawfully restrained, the manner of sale and the prices of the greater part of all gasoline sold in interstate commerce in the United States. Defendants have, as part of said unlawful activities and the purposes and objectives thereof, conspired and combined

with numerous refiners of gasoline throughout the United States as hereinafter more fully alleged. Said violations of law are more fully described as follows:

10. Defendant corporation, acting with and through its officers named as defendants herein and others of its officers and employees, has entered into numerous agreements with refiners of gasoline pursuant to which ethyl fluid is sold [fol. 7] outright by defendant corporation to said refiners from time to time, and said refiners are licensed to use said ethyl fluid and to sell the same when mixed with gasoline. Said license agreements purport to authorize said refiners to treat the gasoline manufactured by them with sufficient ethyl fluid (not exceeding 3 cubic centimeters per gallon of gasoline) to produce a grade of gasoline having an octane rating of not less than 76 (such gasoline being known as premium or "ethyl" grade of gasoline), or a grade of gasoline having an octane rating not in excess of 70 (such gasoline being known as regular gasoline and sometimes referred to by defendants as "Q" gasoline). Said license agreements impose restrictions upon the refiner licensees with respect to the prices at which the premium or Ethyl grade of gasoline may be sold by them to jobbers, dealers and consumers. Said license agreements impose the further restriction as to regular gasoline that said regular gasoline shall be sold by the refiner as the next highest priced motor fuel below the refiner's Ethyl gasoline, and shall be the refiner's best non-premium gasoline.

11. An average of approximately .85 cubic centimeters of ethyl fluid per gallon, or one part of ethyl fluid to 4400 parts of gasoline, is required to produce regular gasoline. Usually the quantity of ethyl fluid required to produce premium gasoline is approximately 2.25 cubic centimeters per gallon of gasoline, or one part of ethyl fluid to 1700 parts of gaso- [fol. 8] line. Nearly all (more than 96%) of the gasoline treated with ethyl fluid is regular gasoline.

12. The names of refiners who have entered into said license agreements are too numerous to set out herein, there being approximately 123 such refiner licensees, who together refine, sell and control more than 85% of all gasoline sold in the United States. Copies of typical forms of such refiner license agreements employed by defendant corporation are attached hereto and marked Exhibits A, B, and C, respec-

tively. All except one of the major (i. e. large, integrated) refiners of gasoline in the United States have entered into such license agreements with defendant corporation, and all except one of said major company licensees treat with ethyl fluid their regular or so-called house brands of gasoline, which constitute more than 90% of all gasoline manufactured and sold by each of said major company licensees.

13. Each of said refiner license agreements contains the express provision, and defendant corporation and each of the refiner licensees have agreed with each other, that the latter will sell gasoline treated with ethyl fluid only to those jobbers who shall have been licensed by defendant corporation to handle such gasoline. Jobbers have been licensed by defendant corporation, acting with and through its officers named as defendants herein, and others of its officers and employees, under two forms of licenses, one purporting to license the handling of premium or Ethyl and the other of regular gasoline. Copies of each of said forms of [fol. 9] licenses are attached hereto and marked Exhibits D and E, respectively. Jobbers desiring to apply for such licenses are required to apply through their respective refiners suppliers, who, in turn, submit such jobber applications to defendants. Very often the same jobbers have been licensed under both forms of licenses. Approximately 10,000 jobbers have been granted such licenses by defendants. Numerous applications for jobber licenses have been denied. Apart from the issuance of such licenses to said jobbers (through their respective refiner suppliers, as aforesaid) and the investigation thereof hereinafter described, defendant corporation does not have any business relations with any of said jobbers.

14. Said jobber licenses purport to be aimed at the protection of health and the maintenance of quality of gasoline treated with ethyl fluid. The addition of ethyl fluid to gasoline, however, does not cause or produce any dangers or hazards to health, the Ethyl and regular gasoline being in no respect more dangerous to health than ordinary untreated gasoline. No authentic cases of lead poisoning, or other injury to health from such lead treated gasoline, have ever been discovered. Also, defendants have not employed or required the use of any trade name or trade mark in connection with regular gasoline, and have established no trade reputation in connection with such gasoline. No minimum

octane requirement is specified by the defendants with re- [fol. 10] spect to such gasoline and the maintenance of quality thereof is not, actually or in practice, a factor in defendants' licensing policy.

15. Defendants have employed said jobber licenses, and their power to grant or withhold the same, so as to require and compel jobbers purchasing outright any gasoline treated with ethyl fluid to maintain so-called "business ethics", a term employed by defendants to denote compliance with approved marketing policies of the major oil companies, or the market leaders among such major oil companies, and particularly the maintenance by jobbers, and retail dealers who in turn purchase such gasoline outright from jobbers, of the retail prices for gasoline posted by said major oil companies or market leaders. Defendants have refused to grant licenses to a large number of jobbers who do not abide by said approved marketing policies or do not maintain said major oil company prices, and they have required and compelled jobber licensees, under threat, or apparent threat of revocation of said licenses or refusal to renew said licenses, to maintain, and to see to it that their retail dealer outlets maintain, said approved marketing methods and practices and prices of said major oil companies or market leaders. Each jobber license contains a provision whereby defendant corporation is authorized to cancel said license, without stating any reasons therefor, at any time upon thirty days' notice.

16. In order to effectuate said policies, and said control and restrictions upon jobbers and their retail dealers, de- [fol. 11] fendants have organized and maintained an extensive system of investigation of the practices and prices maintained by jobbers in their retail outlets or those maintained by the retail dealers to whom they sell. Ostensibly such investigations, whether of jobber licenses or of applicants for jobber licenses, have been made for the purpose of protecting the quality of gasoline treated with ethyl fluid or of discovering possible health hazards in the sale of such gasoline, but in fact the primary purpose of said investigations, and the only substantial purpose thereof, has been as aforesaid, to effectuate the unlawful control of and restrictions upon, said jobbers and their retail dealers above described. By reason thereof, regular investigators, or field representatives, in the employ of defendant corpo-

ration have been instructed not to report their findings in writing, and the purposes and results of said investigations have been concealed. Usually no records have been made or preserved disclosing the aforesaid true reasons, or any reasons, why licenses to jobbers have been refused. Said investigators or field representatives are many in number, are located throughout the United States, and exercise wide discretion and authority in determining the granting or refusal of jobber licenses; usually the mere decision of the field investigator as to the applicant's "business ethics", without supporting data, has determined whether a license would be granted.

[fol. 12] 17. Refiners generally, as well as jobbers, know and understand that jobber licensees, and their dealers, are required to maintain prices as aforesaid and to abide by the marketing practices and methods of the major oil companies as aforesaid, and jobber licensees generally have accordingly conformed to these requirements.

18. As part of said unlawful policies, defendants have from time to time required that each jobber licensee contract to purchase all his requirements of gasoline from one refiner supplier. Similarly defendants have employed the power inherent in said jobber licensing system to enforce supply contracts of jobbers with refiners, and they have refused to license jobbers who desired to change their sources of supply, upon the ground that said jobbers were under contract to purchase from their existing refiner suppliers, even where said jobbers have contended that such contracts had been abrogated, or for other reasons were not enforceable against them.

19. Defendants' policies and practices with respect to jobbers have abused, and gone beyond the scope of, any patent rights defendants may own or control, and have constituted an unlawful exercise of future control over what purchasers may wish to do with gasoline which they have purchased outright for full consideration. Acting in concert, and in combination with said refiner licensees, as aforesaid, defendants have employed said jobber licenses almost exclusively for the purpose, and with the effect, [fol. 13] of controlling and regulating the marketing of gasoline throughout the United States, and they have attempted to control, and have, in fact, controlled and regu-

lated the marketing policies of, and prices charged for gasoline at retail by, jobbers and their dealers. The aforementioned restrictions upon refiner licensees, and particularly those inuiting and selecting the jobbers to whom said refiners may sell gasoline treated with ethyl fluid, have not been normally and reasonably adapted to secure pecuniary reward to which defendants may be justly entitled by reason of any patent rights. Defendants have thereby substantially monopolized and restrained trade among refiners, jobbers and dealers in the sale of gasoline in interstate commerce as aforesaid, all in violation of the Act of Congress of July 2, 1890.

20. Defendants are now engaged in said unlawful acts and practices and threaten to and will continue to engage in said unlawful acts and practices unless enjoined by this Court.

Wherefore petitioner prays:

1. That writs of subpoena issue directed to each of said defendants, commanding them to appear herein and answer the allegations contained in this petition, and to abide by and perform such decrees as the Court may make in the premises;

2. That the monopoly, combination and conspiracy described herein be declared illegal and in violation of the Sherman Antitrust Act;

3. That defendants and each of them, and each and all [fol. 14] of their respective officers, agents and employees, and all persons acting or claiming to act on behalf of them, or any of them, be perpetually enjoined from continuing the unlawful practices hereinabove described and, particularly, from requiring jobbers to procure licenses for handling gasoline treated with ethyl fluid; and from agreeing with refiners, carrying out existing agreements, or otherwise requiring, that the latter shall sell gasoline treated with ethyl fluid to such jobbers only as defendants shall license or otherwise designate; and from in any other way, directly or indirectly, continuing to engage in the aforesaid monopoly, combination and conspiracy, or any other monopoly, combination and conspiracy of like character or effect;

4. That petitioner have such other and further relief as the case may require and the Court may deem proper in the premises;

5. That petitioner recover its costs.

John Henry Lewin, Hammond E. Chaffetz, W. B. Watson Snyder, Grant W. Kelleher, Special Assistants to the Attorney General. Stanley Reed, Acting Attorney General, Feb'y 16, 1937. Robert H. Jackson, Assistant Attorney General. Lamar Hardy, United States Attorney.

[fols. 15-47] *Duly sworn to by John Henry Lewin. Jurat omitted in printing.*

[fol. 48] IN UNITED STATES DISTRICT COURT

[Title omitted]

ANSWER

Now come the defendants, Ethyl Gasoline Corporation, Earle W. Webb (incorrectly designated herein as Earle C. Webb), and John Coard Taylor, and for answer to the Petition herein say:

1. They admit the allegations of paragraph 1 of the Petition.

2. For answer to the allegations of paragraph 2 of the Petition, they admit that the purpose of this suit is for relief under the Act of Congress of July 2, 1890, known as the Sherman Anti-Trust Act, but deny that they or any of them have in any way violated said Act.

3. They deny the allegations of paragraph 3 of the Petition except that they admit that the interstate commerce in gasoline described in the Petition is carried on in part within the Southern District of New York.

4. For answer to the allegations of paragraph 4 of the Petition, they admit that for a number of years the defendant corporation has been continuously engaged in the production of an anti-knock compound (or fluid) known by its licensees as Ethyl fluid when used in making a premium gasoline, and as "Q" fluid when used in making a regular gasoline, and they admit the allegations of said

paragraph 4 with respect to the nature of said fluids. They [fol. 49] admit that defendant corporation is the sole producer of said Ethyl and "Q" fluids within the United States and that it is the owner of exclusive rights under Letters Patent of the United States covering the manufacture, use and sale of said fluids and allege that it is also the owner of exclusive rights under Letters Patent of the United States covering the manufacture, use and sale of motor fuels containing tetraethyl lead and covering the use of tetraethyl lead as an anti-knock in an internal combustion engine. Defendants are without information sufficient to constitute a belief as to whether or not other substances of like character are manufactured or sold and therefore defendants deny that no other substance of like character is manufactured or sold but they admit that no other substance of like character is sold in commercial volume. Defendants admit that speaking generally Ethyl and "Q" fluids have been found to be the cheapest way of getting certain high anti-knock values, but they deny the allegations of paragraph 4 of said Petition with respect to the practicability of improved refining processes, such as so-called "cracking" processes, and allege that there are many instances where by reason of the quality of the crude petroleum to be refined and the nature of the distribution of petroleum products by a refiner, "cracking", re-forming, and other refining processes have been and are now being employed to produce a high octane rating gasoline competitive with the addition of Ethyl and "Q" fluids to gasoline, and they further allege that a very substantial amount of gasoline to which no Ethyl or "Q" fluids have been added is sold in the United States in competition with gasoline to which Ethyl and "Q" fluids have been added, and that the gasoline so sold is produced by either cracking, reforming, or other refining processes, or by the addition of other compounds.

5. As to paragraph 5 of the Petition, defendants admit the allegations of said paragraph as to the defendants Earle W. Webb and John Coard Taylor, and admit that the defendant corporation does not manufacture, refine or sell any gasoline, and that only in exceptional circumstances does it mix Ethyl or "Q" fluids with gasoline, but upon [fol. 50] information and belief defendants deny each and every other allegation of said paragraph.

6. For answer to the allegations of paragraph 6 of the Petition, they admit that more than 85% of all gasoline sold in the United States which is processed so as to obtain a high octane rating is treated with Ethyl and "Q" fluids, and that approximately 70% of all gasoline manufactured and sold in the United States is treated with the same fluids. Defendants are without information sufficient to form a belief as to each and every other allegation of said paragraph 6, and therefore deny the same.

7. They admit the allegations of paragraph 7 of the Petition except they *they* allege that gasoline is also sold by refining companies to independent retail dealers and to consumers.

8. They admit the allegations of paragraph 8 of the Petition except that they deny that a large part of the gasoline sold by jobbers is sold and distributed by such jobbers in interstate commerce, and allege the fact to be that, only a comparatively small number of jobbers sell any gasoline in interstate commerce and that only a comparatively small portion of the sales of gasoline by jobbers is in interstate commerce.

9. They deny each and every allegation of paragraph 9 of the Petition.

10. For answer to the allegations of paragraph 10 of the Petition, they admit that the defendant corporation has entered into numerous aggreements with refiners of gasoline pursuant to which Ethyl and "Q" fluids are delivered by the defendant corporation to said refiners from time to time and said refiners are licensed to manufacture Ethyl gasoline and gasoline containing "Q" Brand of Anti-Knock Compound, and to sell and deliver same, and that said license agreements purport to authorize said refiners to treat gasoline manufactured by them with at least sufficient Ethyl fluid (not exceeding 3 cubic centimeters of tetraethyl lead per gallon of gasoline) to make the gasoline equal in anti-knock value to the standard Ethyl gasoline as fixed by the [fol. 51] defendant corporation, which standard now constitutes an octane rating of not less than 76 (the gasoline so treated being known as Ethyl gasoline), or with an amount of "Q" fluid to make the resultant product manufactured under the agreement have at the time of sale to the con-

sumer an anti-knock value of not more than seventy (70) octane number (such gasoline being known as regular gasoline and sometimes referred to by defendants, refiners and jobbers as "Q" gasoline). The defendants admit that the said license agreements impose restrictions upon the refiner licensees with respect to the comparative price at which Ethyl gasoline may be sold by them to jobbers, dealers and consumers, and the restriction that said "Q"-treated gasoline shall be sold by the refiner as the next highest priced motor fuel below refiner's Ethyl gasoline and shall be the refiner's best non-premium gasoline referred to in the agreement between refiner and defendant corporation in respect to the manufacture and sale of Ethyl gasoline. However, defendants allege that the agreements which the defendant corporation has entered into with refiners as aforesaid with respect to price at which the resultant product may be sold are license agreements of the general character annexed to the Petition as Exhibits A, B and C and that the authority and restriction of such license agreements are as therein expressed, and the defendants allege that all deliveries of Ethyl and "Q" fluids to refiners are subsequent to the making of such a license agreement and in conformity with the provisions thereof. Defendants deny each and every other allegation of said paragraph 10 of the Petition.

11. For answer to the allegations of paragraph 11 of the Petition, defendants aver that there is an average of approximately 0.85 cubic centimeters of tetraethyl lead in "Q" fluid (not fluid itself) per gallon of gasoline treated to produce regular or "Q"-treated gasoline, and that there is an average of approximately 2.25 cubic centimeters of tetraethyl lead in Ethyl fluid (not fluid itself) per gallon of gasoline treated to produce premium or Ethyl gasoline, and that approximately 94% of the gasoline treated with tetraethyl lead is regular or "Q"-treated gasoline; and [fol. 52] except as herein expressly admitted or averred, defendants deny each and every allegation of said paragraph 11.

12. They admit the allegations of paragraph 12 of the Petition, except that they deny upon information and belief, that all but one of said major company licensees treat with Ethyl fluid their regular or so-called house brands of gasoline, and that such gasoline constitutes more than 90% of

all gasoline manufactured and sold by each of said major company licensees; and they allege that the fluid so used is "Q" fluid and that such gasoline constitutes between 80% and 90% of all gasoline manufactured and sold by each of said major company licensees.

13. They deny each and every allegation of paragraph 13 except that they admit that each of said refiner license agreements contains the provision as to sales to jobbers, that the refiner licensee will sell gasoline when treated with Ethyl or "Q" fluids to only those jobbers who hold a license from the defendant corporation to sell such gasoline, and they admit the making of jobber agreements in the form of Exhibits D and E attached to the Petition. Defendants further admit that jobbers desiring to apply for such licenses are generally required to apply through their prospective refiner suppliers who in turn submit such jobber applications to defendant corporation, and that often the same jobbers have been licensed under both forms of license. Defendants further admit that approximately ten thousand (10,000) jobbers have been granted such licenses by the defendant corporation and that numerous applications for jobber licenses have been denied. Defendants aver that the principal business relation of the defendant corporation with jobbers is in the promotion of sales of Ethyl and "Q"-treated gasoline and the protection of the quality thereof and the good will of the defendant corporation therein, and the maintenance of health regulations hereinafter mentioned.

14. For answer to the allegations of paragraph 14 of the Petition, they admit that said jobber licenses are aimed at [fol. 53] the protection of health and the maintenance of quality of gasoline treated with Ethyl and "Q" fluids, and that to the knowledge of these defendants, no authentic cases of lead poisoning or other injury to health from such lead treated gasoline have ever been discovered, and that no minimum octane number is required by defendants in respect to regular gasoline containing "Q" fluid, and they allege that the United States Public Health Service has prescribed certain regulations covering the blending of Ethyl and "Q" fluids with gasoline and the sale and use of gasoline treated with such fluids and that the defendant corporation has endeavored by its jobber licenses to comply with such regulations and takes steps to see that its jobber

licensees observe such regulations and that in so doing defendants are conforming to the wishes of the United States Public Health Service and that such performance on the part of the defendants is essential to the maintenance of the good will of the defendant corporation with the United States Public Health Service, with the licensees of defendant corporation, and with the public. Defendants admit that in the opinion of executives of the defendant corporation, the addition of Ethyl fluid or "Q" fluid to gasoline does not cause or produce any dangers or hazards to health and is no more dangerous to health than ordinary untreated gasoline provided that said gasoline is used for the purpose for which it is designed to be used, namely, as a motor fuel only, and that it does not contain an amount of tetraethyl lead which is in excess of that prescribed by the regulations of the United States Public Health Service, and the aforesaid licenses. Defendants allege that the anti-knock compound intended for use in the production of said regular gasoline referred to in paragraph 14 of the Petition is delivered by the defendant corporation to refiners as "Q" fluid and as such is well known in the oil business, and that gasoline produced by the addition of "Q" fluid is sold by refiners to their jobbers and other customers and upon information and belief is known and referred to by a large number of refiners, jobbers and retailers as "Q" gasoline. Defendants allege that in the sale of said regular or "Q" treated gasoline the defendant corporation has required the [fol. 54] jobber to specify the trade name said jobber will use in connection with the sale of "Q" treated gasoline as appears from paragraph 4 of the form of jobber license agreement attached to the Petition as Exhibit E. Defendants further allege that by reason of said regulations of the United States Public Health Service said regular or "Q" treated gasoline is required to be dispensed at pumps bearing lead warning signs of the prescribed form substantially as set forth in Exhibit E of said Petition; that upon information and belief said warning signs have acquired a meaning with a large number of the public purchasing motor fuels as indicating a grade of gasoline of good quality and such "Q" treated gasoline is understood in the mind of a substantial percentage of the purchasing public to be related to Ethyl Gasoline and to be sponsored by the defendant corporation. Defendants allege that substantially all of such "Q" treated gasoline is between 68 and

70 octane and that the defendant corporation has specified in its refiner's license contracts for the production of so-called "Q" gasoline certain requirements as to the distillation, sulphur, corrosion and gum qualities of said gasoline as more fully appears in paragraph 5 of Exhibit A attached to said Petition, and that the jobber license contracts such as Exhibit E of the Petition provide that jobbers shall not adulterate or modify "Q" treated gasoline as sold by the refiner; all for the purpose of maintaining the reputation and good will of the defendant corporation. Except as herein expressly admitted, defendants deny each and every allegation in said paragraph 14 of the Petition.

15. Defendants deny each and every allegation of paragraph 15 of the Petition except that they admit they have refused to grant licenses to a number of jobbers who were not abiding by the marketing policies of the major oil companies or the market leaders among such major oil companies or who were not maintaining the retail prices for gasoline posted by said major oil companies or market leaders. Defendants are informed and believe that if there are or have been any instances of threats or apparent threats as described in paragraph 15 of the Petition, they [fol. 55] are isolated instances and unauthorized by defendants. They allege on information and belief that there are innumerable instances where jobber licensees have not followed the marketing policies of the major oil companies or the market leaders among such major oil companies and innumerable instances of jobber licensees who do not maintain and have not maintained the retail prices for gasoline posted by said major oil companies or market leaders, concerning which instances no action of any character has ever been taken by the defendants. Defendants admit that each jobber license contains a provision whereby defendant corporation is authorized to cancel said license without stating any reasons therefor at any time upon thirty (30) days' notice, but they are informed and believe and therefore allege that such cancellation clause has not been exercised because a jobber licensee was not following the policies and prices of the major oil companies or market leaders.

16. They deny each and every allegation of paragraph 16 of said Petition except that they admit that the defendant corporation has a number of field representatives whose primary function is to promote the sale of gasoline treated

with Ethyl and "Q" fluids and also to see to it that health regulations are being observed and to protect and promote the good will of defendant corporation, and that said field representatives do investigate and report to the defendant corporation many conditions in respect to the marketing of gasoline, including information sometimes as to the marketing practices and prices observed by jobbers in their retail outlets and by the retail dealers to whom they sell, and defendants allege that said field representatives, as a part of said investigations and reports, obtain samples of gasoline treated with Ethyl and "Q" fluids for the purpose of its being analyzed as to quality and as to its compliance with the regulations of the United States Public Health Service and the license agreements aforesaid. Defendants admit that in some instances no records have been made of preserved disclosing the reason why licenses to jobbers have been refused, and defendants admit that said field representatives are located throughout the United States, and that the report and recommendation of the field representative determines largely whether a license will be granted, [fol. 56] and that the recommendations of the field representatives as to whether a license should be granted are generally followed.

17. Upon information and belief, they deny each and every allegation of paragraph 17 of the Petition.

18. They deny each and every allegation of paragraph 18 of the Petition except that they admit that the defendant corporation has from time to time required that each jobber licensee contract to purchase all his requirements of Ethyl Gasoline from one refiner supplier, and it has required in a number of instances a jobber licensee to purchase all his requirements of "Q" treated gasoline from a single refiner supplier. They also admit that the defendant corporation has in some cases refused a license to a jobber who desired to change his source of supply upon the ground that said jobber was under contract to purchase his Ethyl or "Q"—treated gasolines from an existing refiner supplier, which request, if granted, would in the opinion of the defendant corporation have breached the contract which the jobber licensee had with his existing source of supply, although in a very few cases a jobber has contended that such contract had already been abrogated or for other reasons was not enforceable against him.

19. They deny each and every allegation of paragraph 19 of the Petition.

20. They deny each and every allegation of paragraph 20 of the Petition.

21. Defendants further allege that the defendant corporation is the owner of valuable trade-mark rights covering the manufacture and distribution of Ethyl and "Q" antiknock compounds (herein referred to as Ethyl and "Q" fluids) and covering the sale of Ethyl gasoline and gasolines containing "Q" fluid and tetraethyl lead; that defendant corporation has expended a large sum of money and labor in developing and promoting the said trade-mark rights, the good will, reputation and business of the [fols. 57-60] defendant corporation; and that the licensing policies of defendant corporation are reasonable and necessary for the protection of said trade-mark rights, the good will, reputation and business of the defendant corporation.

22. Defendants therefore deny that Petitioner is entitled to the relief prayed for in the Petition or to any part thereof, or to any relief whatsoever against these defendants or any of them, and defendants aver that Petitioner is without equity in the premises, and defendants therefore pray that the Petition be dismissed.

Note.—Defendants have heretofore transmitted to Petitioner a request for further particulars of Petitioner's said Petition, and this answer is filed pursuant to an understanding and agreement with Petitioner that it may be filed without prejudice to defendants' right to move hereafter for further particulars in accordance with such request.

Ethyl Gasoline Corporation, Earle W. Webb and John Coard Taylor; by (signed) Cooper, Kerr & Dunham, Their Solicitors.

(Signed) Drury W. Cooper. Harold W. Norman. Robert S. Dunham, of Counsel.

Duly sworn to by Earle W. Webb and John C. Taylor. Jurats omitted in printing.

[fol. 61] IN UNITED STATES DISTRICT COURT

[Title omitted]

STIPULATION OF FACTS

Plaintiff having filed its petition herein and defendants having filed their answer, it is hereby stipulated and agreed that the issues raised by said pleadings shall be determined without the introduction of other evidence on the basis of the following statement of facts, agreed to solely for the purposes of this suit, subject to objections by either side on the ground of relevancy or materiality, the right to interpose such objections being expressly reserved:

1. Defendant Ethyl Gasoline Corporation is a corporation organized in 1924 under the laws of *of* the State of Delaware, and has a principal place of business at 135 East 42nd Street, in the City and State of New York. One-half of its capital stock is owned by the Standard Oil Com-[fol. 62] pany (New Jersey), and the remainder is owned by General Motors Corporation and E. I. du Pont de Nemours Company. Defendants Earle W. Webb and John Coard Taylor are President and Vice-President in charge of sales, respectively, of Ethyl Gasoline Corporation. Defendant Webb is a citizen of the State of Connecticut and resides in the town of Greenwich in that State. Defendant Taylor is a citizen of the State of New Jersey and resides in the town of Montclair in that State.

2. Defendant corporation has been for a number of years continuously engaged in the production and sale of an anti-knock compound or fluid (hereinafter referred to as "fluid"), consisting principally of tetraethyl lead, used in increasing the octane, or anti-knock, rating of motor fuel, principally gasoline. When a mixture of gasoline and air is burned in an automobile engine of relatively high compression, "knocking" occurs at frequent intervals. This "knocking" is reduced or eliminated if the mixture of gasoline and air is burned in the presence of the vapors of this fluid. Commercially this result has been obtained by mixing with gasoline, at the refineries, relatively minute quantities of fluid so that the fluid will be in the combustion chamber of the automobile engine when the gasoline is burned. Automobile engines of recent years have generally been of relatively high compression.

The compression of an automobile engine is the extent to which the mixture of gasoline vapor and air is compressed in the cylinder by the piston moving upward. The higher the compression of an automobile engine the greater is its inherent efficiency, i. e., it will develop more power and run [fol. 63] longer with a given quantity of gasoline, hence it may be smaller in size and still suitable for a certain task. However, in order to realize these advantages the gasoline used must be of a correspondingly high compression value (high "critical compression pressure", i. e., high anti-knock value); otherwise, "knocking" with a loss of power, instead of an increase, will occur whenever, as is frequent in normal driving, the automobile engine is called upon to do more than a small amount of work. Generally stated, the octane number of gasoline is a rating, on a convenient arbitrary scale, of its critical compression pressure—that is, the compression to which a mixture of the gasoline and air may be subjected without causing a "knock" and consequent loss of power in an automobile engine. Engines of high compression may be made, by retarding of the spark, to operate without knock on fuels of lower critical compression pressure than those of higher octane rating, but this results in a reduction in both power and economy, thus defeating the purpose for which the high compression feature of the engine was designed.

The present composition of fluid, for use in automobile gasolines, is as follows, in percentages by weight:

Tetraethyl lead	63.3
Ethylene dibromide	25.75
Ethylene dichloride	8.72
Kerosene, dye, etc.	2.23

3. Defendant corporation is the sole producer of fluid in the United States, and is the owner of Letters Patent of the United States: No. 1,573,846, issued February 23, [fol. 64] 1926; No. 1,592,954, issued July 20, 1926; No. 1,668,022, issued May 1, 1928 and No. 1,787,419, issued December 30, 1930, copies of which are attached hereto as Exhibits 3-A, 3-B, 3-C and 3-D respectively.

Patent No. 1,573,846 (Exhibit 3-A) describes and claims an improved motor fuel which is more efficient and higher in anti-knock value than the gasoline from which it is made. The patent claims a product comprising gasoline and an anti-knock ingredient, e. g., tetraethyl lead; and

gasoline treated with fluid (both Ethyl and "regular"), as described in this stipulation, is a product which is claimed in each of the claims of the patent. Patent No. 1,592,954 (Exhibit 3-B) describes and claims compositions of matter relating to motor fuels, whereby a halide compound, such as a chloride or a bromide, or a compound of like properties, is included with a lead anti-knock ingredient so that when the fuel is burned, the lead will form only a non-fluxing compound and deleterious effects of lead on spark plug points and other motor parts, possible over a period of time, will be avoided. As described in this stipulation, fluid is a product which is claimed in claims 9 and 10 of this patent, and gasoline treated with fluid (both Ethyl and "regular") is a product which is claimed in claims 1 to 7, inclusive. Patent No. 1,668,022 (Exhibit 3-C) describes and claims compositions of matter relating to motor fuels, wherein one feature involves the use of volatile bromide compounds such as ethylene dibromide, as specifically advantageous substances for preventing the formation of fluxing compounds and consequent deleterious effects on motor parts, when a lead anti-knock ingredient is used. As described in this stipulation, fluid is a product which is claimed [fol. 65] in claims 21, 22 and 23 of this patent, and gasoline treated with fluid (both Ethyl and "regular") is a product which is claimed in claims 9, 10, 11 and 12. Patent No. 1,787,419 (Exhibit 3-D) describes and claims an improved method for using motor fuels, such as gasoline, whereby improved efficiency and an inhibition of knocking are obtained; and whereby low compression gasoline may be used in motors of relatively high compression pressure. The claims of this patent claim the burning, in a motor of relatively high compression, of the combustible mixture of gasoline and air (e. g., the mixture produced in the carburetor of a motor) in the presence of vapors of an anti-knock ingredient, e. g., tetraethyl lead. The present commercial method of introducing tetraethyl lead into the combustion chamber of the motor is by mixing it with gasoline at the refinery so that when the mixture of gasoline and air enters the combustion chamber the vapors from tetraethyl lead are present at the same time. This result was at one time accomplished by mixing fluid with gasoline at the filling station pumps; direct injection of fluid into the intake manifold of the engine has been used to a limited extent by one of the airways.

4. No other substance of like character is manufactured or sold commercially. To explain the position of fluid in the petroleum industry it is necessary to describe briefly the manufacture of gasoline. Speaking generally, gasoline is produced by all or some of the following processes:— (1) The crude oil is distilled, and the distillate boiling within the range of gasoline is separated from the higher and lower boiling constituents. Such gasoline is known as "straight [fol. 66] run" or "virgin" gasoline or naphtha. (2) All or some portions of the products of higher boiling range than gasoline are subjected to high temperatures and (usually) high pressures, and under these conditions are partially converted into products boiling in the gasoline range. This process, which may be carried out under widely varying conditions, is known as "cracking," and the gasoline so produced is known as "cracked gasoline." In the United States at present the amounts of straight run and cracked gasoline produced are about equal. (3) Gasoline is produced by compressing natural gas (thus condensing out some of the gasoline vapors usually contained therein) or by scrubbing natural gas with oil, (thus absorbing some of the gasoline vapors). Gasoline produced by such processes is known as "natural gasoline" or "absorption gasoline," and is generally a very volatile product. (4) Straight run gasoline or naphtha may be modified in chemical composition by subjecting it to heat and pressure under conditions similar to those of cracking. Such a process is known as "reforming," and the product is called "reformed gasoline." (5) Gases formed in the refining processes and natural gas may be subjected to treatment which results in chemical reactions which form gasoline from these gases. Such a process is known as polymerization and the product is known as "polymerized gasoline."

Each of these five types of gasoline has its own chemical and physical properties, and the refiner usually blends them or some of them into one or more commercial grades, depending upon his own marketing set up. Straight run gasoline has an anti-knock value which depends on the nature of the crude oil from which it was made. This may be [fol. 67] quite high in the case of a limited number of crude oils (70 octane number or better) and as low as 30 octane number in a limited number of other cases, but the range of anti-knock values of straight run gasolines distilled from the greater part of crude oil produced in the United States

is from forty to sixty octane number. The anti-knock value of cracked gasoline depends both upon the nature of the crude oil and the nature of the cracking process, but mainly on the latter. It is usually higher than that of the straight run gasoline from the same crude and may range as high as 70 octane number and sometimes as high as 72 or 73 octane number, but usually does not exceed 68 or 69 octane number. The anti-knock value of reformed gasoline is always higher than that of the straight run gasoline and may be made very high. However, it is usually true that the higher the anti-knock value obtained, the greater the losses in the form of gas and coke. Natural or absorption gasoline (the quantity of which is limited by the amount of natural gas available) varies in anti-knock value with the source, and being extremely volatile, is used for blending with other gasolines to give them increased volatility. Polymerized gasoline is usually of very high anti-knock value (80 octane number or better), but the amount which any refinery can produce is limited to the amount of refinery or natural gases available.

Each of the improved refining processes described above is patented, and there are several distinct groups of patents covering each or all of such processes, under which licenses are offered by their respective owners. Many refiners have paid-up licenses under one or more of these groups of [fol. 68] patents, and current royalty fees are not a controlling factor with refiners in deciding whether to improve the anti-knock value of their gasoline by the addition of "fluid" or by the use of patented refining processes. All or nearly all refiners do some cracking. In practice there is wide variation in the procedure which different refiners select for producing gasoline of high anti-knock value. Some companies find it most economical to do as little as possible of cracking and reforming, thus producing at first a gasoline of low anti-knock value, and to add thereto a relatively large amount of fluid. Other refiners find it more economical to do more cracking, reforming, and polymerizing, and to add little or no fluid to the gasoline. The same refiner may in one refinery add the maximum amount of fluid, and in another refinery add no fluid at all, depending upon the particular circumstances at the two refineries. All major oil companies except Sun Oil Company, American Oil Company and the Shell Companies use some fluid in substantially all their regular and premium gasoline, and

The Shell Companies use fluid in their premium and in a part of their regular gasoline. Sun Oil Company, a large refiner, has never applied for a license to use fluid, and the Shell Companies, constituting one of the largest refiners, although licensed by defendant corporation to do so, do not use fluid in most of their regular gasoline. The regular gasoline from these two companies is sold competitively with regular gasoline treated with fluid. Sun Oil Company does not generally do business through jobbers. American Oil Company does business only along the East Coast of the United States.

High anti-knock values may be and are also obtained by [fol. 69] the addition to gasoline of benzol and alcohol, but insufficient quantities of the former are available to permit its use in any large amounts of gasoline (the percentage of gasoline so treated being about 2%), while alcohol has not been used commercially in the United States to any significant extent, though it has been used extensively abroad for many years. The American Oil Company, a large refiner, has a license for the use of fluid, but by preference sells a benzol treated gasoline at a price higher than that charged in the same territory for gasoline treated with fluid.

Speaking generally, most refiners find it economical and advantageous to obtain a part of the anti-knock value of their regular and premium gasoline by the use of fluid.

5. Approximately 70% of all gasoline manufactured and sold in the United States is treated with fluid. Nearly all of the gasoline manufactured and sold in the United States contains some cracked or reformed gasoline but approximately 20% of the total gasoline sold in the United States is not processed so as to obtain a high octane rating. A substantial amount of this 20% of low octane gasoline is sold as so-called third grade gasoline. Approximately 85% of all gasoline sold in the United States which has been processed so as to obtain a high octane rating is treated with fluid.

6. Defendants do not manufacture, refine or sell any gasoline, and only in exceptional circumstances does defendant corporation itself mix fluid with gasoline of others. Defendant corporation manufactures the fluid and sells the same to licensed refiners, to be mixed by the latter with their [fol. 70] gasoline, intending that the treated gasoline shall be used as a motor fuel. Defendant corporation does not sell fluid commercially to any persons other than licensed

refiners. Defendant corporation makes its profit solely from the sale of fluid and its annual profits have been and are very substantial. Fluid is delivered by defendants in interstate commerce to the refineries and some terminal points in specially built tank cars, tank trucks and drums. The process of treating gasoline with fluid is purely a mixing process at the receiving points, in which the fluid is added to gasoline by means of carefully designed equipment which accomplishes the unloading and mixing operation through a closed system entirely by vacuum for the purpose of decreasing or eliminating possible health hazards due to spillage of tetraethyl lead in concentrated form. The building and machinery constituting the plant by which the fluid is unloaded, handled and mixed by the refiners with gasoline are required by defendant corporation to be built in strict compliance with blueprints submitted to and approved by defendant corporation. A typical plant is illustrated by Exhibits 6-A and 6-B attached hereto. The average cost of such a plant and equipment is around $10,000. Defendant corporation further requires that the process of handling and mixing fluid be carried out in ac-ordance with its printed regulations, a copy of which is attached hereto as Exhibit 6-C.

7. Gasoline is manufactured from crude petroleum at refineries located in various States of the United States, principally in the States of Texas, Oklahoma, California, [fol. 71] Illinois, Indiana, Missouri, New Jersey, Pennsylvania, New York, Kansas, Wyoming, Michigan, Louisiana, Ohio, Kentucky, Montana, and West Virginia. The greater part of all gasoline manufactured at such refineries, and the greater part of all gasoline treated with fluid, is sold and transported in interstate commerce from the States in which such refineries are located into each of the other States of the United States, including the State of New York and the Southern District of New York, wherein such gasoline is sold for consumption. Said gasoline is sold in part through wholesale and retail outlets owned and controlled by refining companies; in part to independent retail dealers and consumers; and in part to so-called jobbers for resale to retail dealers and consumers.

8. Jobbers usually own or lease and operate bulk storage plants conveniently located so as to serve gasoline purchased by them from refiners, by their (jobbers') tank trucks or tank wagons, to retail service stations, either

owned or operated by them, or independently owned or operated by retail dealers, in the various marketing territories served by them. There are approximately 12,000 jobbers of gasoline doing business in the several States of the United States, and they distribute a substantial part of all gasoline sold and distributed in the United States. The greater part of all gasoline, and of the gasoline treated with fluid, purchased by said jobbers is purchased by them in tank car quantities, and is delivered to them from the States in which said gasoline is refined to the States in which said jobbers are engaged in business. A small part of the gasoline sold by jobbers is sold and distributed by them in inter-[fol. 72] state commerce from the States in which their bulk storage plants are located to service stations located in adjoining States.

9. Defendant corporation, acting with and through defendants Webb and Taylor and others of its officers and employees, has entered into numerous agreements with refiners of gasoline, copies of typical forms of which are attached hereto as Exhibits 9-A, 9-B and 9-C, pursuant to which fluid is sold and delivered by defendant corporation to said refiners from time to time, and pursuant to which said refiners are licensed to mix said fluid with gasoline and to sell gasoline containing the same, as follows: Said license agreements purport to authorize said refiners to treat gasoline manufactured by them with sufficient fluid (not exceeding 3 cubic centimeters of tetraethyl lead per gallon of gasoline) to make the gasoline equal in anti-knock value to the standard of Ethyl gasoline as fixed by the defendant corporation, which standard now consists of an octane rating of not less than 76 (the gasoline so treated being known as Ethyl gasoline), or with an amount of fluid to make the resultant product have at the time of sale to the consumer an anti-knock value of not more than seventy (70) octane number (such gasoline being known as regular gasoline and sometimes referred to as "Q" gasoline). The licensing with regard to regular gasoline was inaugurated in the spring of 1933. Reference in this stipulation to gasoline of high octane or anti-knock value shall be deemed to refer to gasoline having an octane rating of 68 or more. Regular gasoline, as referred to in this stipulation (whether treated with [fol. 73] fluid or not), almost universally is of high octane or anti-knock value.

10. An average of approximately 0.9 cubic centimeters of tetraethyl lead per gallon, or one part of tetraethyl lead to 4200 parts of gasoline, is used to produce regular gasoline. The average quantity of tetraethyl lead used to produce Ethyl gasoline is approximately 2.25 cubic centimeters per gallon of gasoline, or one part of tetraethyl lead to 1700 parts of gasoline. Approximately 94% of all gasoline treated with fluid is regular gasoline.

11. Defendants have issued licenses to approximately 123 refiners, who together refine and sell approximately 88% of all gasoline sold in the United States. All except one (Sun Oil Company) of the major (i. e., large, integrated) refiners of gasoline in the United States have entered into such license agreements with defendant corporation, and all except two (Shell Companies and American Oil Company) of said major company licensees treat with fluid substantially all of their regular or so-called house brands of gasoline. Gasoline treated with fluid constitutes between 75% and 80% of all gasoline manufactured and sold by said major company licensees (except Shell and American) and between 70% and 72% of all gasoline manufactured and sold by other than major company licensees. Most of said major company licensees sell some quantities of regular gasoline which contains no fluid, principally to special commercial accounts.

12. Each of said refiners' license agreements purports to [fol. 74] impose a restriction upon the refiner licensee with respect to the minimum differential at which Ethyl gasoline may be sold by it to jobbers, dealers and consumers above the price of the licensee's best non-premium grade of gasoline, and a restriction that regular gasoline treated with fluid shall be sold by the refiner as the next highest priced motor fuel below refiner's Ethyl gasoline and shall be the refiner's best non-premium gasoline referred to in the agreement between refiner and defendant corporation in respect to the manufacture and sale of Ethyl gasoline. All deliveries of fluid to refiners are made subsequent to the making of such license agreements and in conformity with the provisions thereof.

13. Each of said refiner license agreements contains the provision (almost invariably complied with by refiner licensees) with respect to sales to jobbers purporting to restrict the refiner licensee to selling gasoline when treated with fluid to those jobbers only who hold licenses from the

defendant corporation to distribute such gasoline. Jobbers have been licensed by defendant corporation under two forms of licenses, one purporting to license the handling of Ethyl gasoline and the other of regular gasoline containing fluid, copies of each of said forms of jobber licenses being attached hereto as Exhibits 13-A and 13-B respectively. Jobbers desiring to apply for such licenses are generally required by defendant corporation to apply through their prospective refiner-suppliers who in turn submit such jobber applications to defendant corporation. In many cases the same jobbers have been licensed under both forms of jobber-license. Approximately eleven thousand (11,000) of the [fol. 75] twelve thousand (12,000) jobbers aforementioned have been granted such licenses by the defendant corporation and numerous applications for jobber licenses have been denied. Complaints have been received by the Department of Justice, from time to time during the last several years, from jobbers whose applications for jobber licenses have been denied. Many licenses were granted to licensees to whom licenses were at first denied. Apart from the issuance of licenses to jobbers, the only business relations of the defendant corporation with jobbers are in the promotion of sales by the jobbers of gasoline treated with fluid and in connection with the investigation of the jobbers.

14. Gasoline containing fluid was first placed on sale February 1, 1923, and about 300,000,000 gallons of such gasoline had been sold up to May, 1925. During this period several serious cases of lead poisoning occurred in the manufacture of tetraethyl lead and concentrated fluid. Certain of these cases achieved wide newspaper publicity in which no distinction was made between the manufacturing hazard and the possibility of a public health hazard which might exist in the use of treated gasoline. In July, 1924, a committee was appointed by the President of General Motors Company consisting of representatives of General Motors Company, Standard Oil Company (New Jersey) and E. I. Dupont de Nemours Company to investigate the public health problems involved in the manufacture, sale and distribution of tetraethyl lead and Ethyl gasoline. This committee requested the United States Bureau of Mines and Columbia University, as impartial parties, to conduct experimentation on this subject. Although the [fol. 76] Bureau of Mines was of the opinion that the United States Public Health Service was the proper gov-

ernmental body to conduct the experimentation, after consultation with the United States Public Health Service, the Bureau of Mines agreed to comply with the request of the committee, in view of the fact that the Public Health Service had no funds available for that purpose. Defendant corporation had established a medical department in its own organization, through which it had undertaken an intensive study of the public health problems involved in the manufacture, sale and use of its product.

Late in 1924 while all the above experiments were being conducted, the Surgeon General was requested by individuals interested in the matter but not connected with defendants to call a conference to determine whether or not there was a public health question involved in the manufacture, distribution or use of gasoline containing tetraethyl lead. Upon completion of a preliminary report of the Bureau of Mines and after conferring with the staff of that Bureau conducting the experiments and the medical committee at Columbia University studying the problem, the Surgeon General called a conference on May 20, 1925, of state and municipal health officials, representatives of labor, authorities on industrial health and hygiene, physiologists and physicians, as well as representatives of the defendant corporation, General Motors Company, Standard Oil Company (New Jersey), and E. I. Dupont de Nemours Company, and defendant Webb. Defendant corporation voluntarily on May 5, 1925, discontinued the sale of the fluid pending the outcome of the conference, and did not resume said business until June, 1926. The results of the studies [fol. 77] of the Bureau of Mines and Columbia University as well as the independent observations and opinions of medical and public health authorities were before the conference. The following resolution was adopted by the conference:

"It is the sense of this conference that the Surgeon General of the United States Public Health Service appoint a committee of seven recognized authorities in clinical medicine, physiology, and industrial hygiene, to present to him, if possible, by January 1 next, a statement as to the health hazard involved in the retail distribution and general use of tetraethyl lead gasoline motor fluid; and that this conference indorses as wise the decision of the Ethyl Gasoline Corporation to discontinue temporarily the sale of ethyl gas;

that this investigation shall be paid for exclusively out of public funds; and that the results of this investigation shall be reported back to a public conference called for the purpose by the United States Public Health Service, at which labor shall be represented."

The Surgeon General thereupon appointed a committee consisting of Dr. David L. Edsall, Dean of Harvard Medical School, Dr. William H. Howell, professor of Physiology at John Hopkins Medical School, Dr. Reid Hunt, professor of Pharmacology at Harvard Medical School, Dr. Walter S. Leathers, professor of Preventive Medicine at Vanderbilt University, Dr. Julius Stieglitz, professor of Chemistry at the University of Chicago, and Charles E. Winslow, professor of Public Health at Yale University.

Prior to the investigation by the Committee appointed by the Surgeon General, no more than 3 cubic centimeters of [fol. 78] tetraethyl lead per gallon of gasoline had been used, due to the fact that licensees would not have found it profitable to use a greater concentration.

On January 17, 1926 the aforesaid committee reported to the Surgeon General in part as follows:

"On the basis of this investigation, the committee feels that the following general conclusions are justified:

1. Drivers of cars using ethyl gasoline as a fuel and in which the concentration of tetraethyl lead was not greater than 1 part to 1,300 parts by volume of gasoline showed no definite signs of lead absorption after exposures approximating two years.

2. Employees of garages engaged in the handling and repairing of automobiles and employees of automobile service stations may show evidence of lead absorption and storage, as indicated by the lead content of the feces and the appearance of stippled cells in the blood. In garages and stations in which ethyl gasoline was used the amount of apparent absorption and storage was somewhat increased, but the effect was slight in comparison with that shown by workers in other industries where there was a severe lead hazard (Group E) and for the periods of exposures studied was not sufficient to produce detectable symptoms of lead poisoning.

3. In the regions in which ethyl gasoline has been used to the greatest extent as a motor fuel for a period of between two and three years no definite cases have been discovered of recognizable lead poisoning or other disease resulting from the use of ethyl gasoline.

In view of these conclusions your committee begs to report that in their opinion there are at present no good [fol. 79] grounds for prohibiting the use of ethyl gasoline of the composition specified (i. e., not exceeding 3 cubic centimeters of tetraethyl lead per gallon of gasoline) as a motor fuel, provided that its distribution and use are controlled by proper regulations. The committee feels that the formulation of specific regulations in regard to the manufacture, distribution and use of tetraethyl lead, ethyl fluid, and ethyl gasoline for adoption and enforcement by the several States belongs properly to the office of the Surgeon General of the Public Health Service. In an appendix to this report, attention is called to certain suggestions which have been made in the course of the discussions of this committee and which it is believed should be taken into consideration in making such regulations.

In conclusion we beg to say that we are conscious of the fact that the conclusions to which we have come in this report, although based upon most careful and conscientious investigations, are subject to the criticism that they have been derived from the study of a relatively small number of individuals who were exposed to the effects of ethyl gasoline for a period of time comparatively brief when we consider the possibilities in connection with lead poisoning. A more extensive study was not possible on account of the limited time. It remains possible that, if the use of leaded gasolines becomes widespread, conditions may arise very different from those studied by us which would render its use more of a hazard than would appear to be the case from this investigation. Longer experience may show that even such slight storage of lead as was observed in these studies may lead eventually in susceptible individuals to recognizable lead poisoning or to chronic degenerative diseases of a less obvious character. In view of such possibilities the [fol. 80] committee feels that the investigation begun under their direction must not be allowed to lapse. The respective States would be dependent upon the findings of such investigations for changes in their regulations. With the experi-

ence obtained and the exact methods now available, it should be possible to follow closely the outcome of a more extended use of this fuel and to determine whether or not it may constitute a menace to the health of the general public after prolonged use or under conditions not now foreseen."

In accordance with the recommendation of the committee, the Surgeon General in 1926 proposed that certain regulations covering the manufacture, shipments and handling of tetraethyl lead and fluid, and the distribution and sale of treated gasoline be adopted and promulgated by the several states and municipalities of the United States; a copy of said regulations is attached hereto as Exhibit 14-A and a copy of certain changes in said regulations, made and published by the Surgeon General November 30, 1928 as appears in said copy, is attached hereto as Exhibit 14-B. No states or municipalities have promulgated these or similar regulations. Defendant corporation, which had cooperated with the Public Health Service during the investigation, assured the Surgeon General that it would abide by, and it has voluntarily abided by, the regulations proposed by the Surgeon General. Accordingly, all of its licenses, both refiner and jobber, have included provisions that the said regulations proposed by the Public Health Service shall be maintained. United State Public Health Service has at all times since the publication of its proposed regulations manifested an [fol. 81] active interest in the compliance by defendant corporation and members of the petroleum industry with such proposed regulations.

In conformity with the aforesaid recommendations of the United States Public Health Service, defendant corporation has provided in its jobber licenses that the jobber licensees shall maintain certain notices on pumps from which is dispensed gasoline containing fluid, to the effect that said gasoline "contains lead (tetraethyl)" and is "for use as a motor fuel only." The type of notice or sign first commonly employed after 1928 is exemplified by the sign Exhibit 14-C, attached hereto. Another form of sign, exemplified by Exhibit 14-D, attached hereto, was proposed at a later time, and this second type of sign was approved by the Surgeon General, who advised defendant corporation that in the opinion of himself and other officers of the Public Health Service, either of the signs would be satisfactory for use under the proposed regulations as modified November 30,

1928, and that he and the other officers saw no objection to the use of these signs interchangeably on pumps selling Ethyl and regular gasoline to the public. No authentic cases of lead poisoning or other injury to health from gasoline containing fluid have ever been discovered which can in any way be attributed to the presence of fluid in such gasoline. In the opinion of the executives of the defendant corporation and of the medical and other experts in the employ of said corporation, formed after fourteen years of experience and exhaustive scientific experiments, tests and studies, the addition of fluid to gasoline in the proportions provided for in refiners' licenses has not to date caused or [fol. 82] produced any dangers or hazards to health and such treated gasoline is no more dangerous to health than ordinary untreated gasoline, when used as a motor fuel.

The proposed regulations of the Surgeon General have not been materially changed or modified, except as otherwise noted herein. The defendant corporation has continued and still continues to maintain its medical department. The chief work of that department includes making field surveys of the effects of lead-treated gasoline on human beings; routine examination of persons who handle leaded gasoline and fluid; and extensive scientific experiments, tests and studies relative to the physiological aspects and effects of lead in gasoline.

In association and cooperation with the medical department, but in addition thereto, defendant corporation also maintains a safety department, which consists of supervising officials and a number of field men who devote their entire time to the safety work of this department. That work includes: supervision of the transportation, unloading and handling of fluid, and supervision of its blending with gasoline; supervision of the cleaning of tanks, including jobbers' storage tanks, which have been used for storing leaded gasoline, both Ethyl and regular; ascertainment and investigation of various possible lead hazards; particularly the investigation of the use of fluid, to prevent the same from being handled or used by unauthorized persons. Prior to the formation of the safety department in August, 1936, its present work was conducted by the entire staff of field representatives of the defendant corporation and by certain members of its medical department.

[fol. 83] Similar investigations carried out in other countries have come to substantially the same conclusions as

those of the United States Public Health Service. Thus the report of the Committee on Ethyl Petrol of the British Ministry of Health in 1930 contained the following conclusions:

"26 (i) The results of our experiments agree with the results of the experiments carried out in the United States of America, whether on behalf of the United States Government Committees or of the Ethyl Gasoline Corporation, and fully confirm the view we expressed in our Interim Report that the findings of the United States Government Committee were justified.

(ii) The widespread use of Ethyl Petrol as a motor fuel for motor vehicles would not, in our opinion, increase the proportion of particulate lead in the atmosphere of our streets to such an extent as to constitute a risk even to the health of that part of the population which is most exposed—namely, police officers on traffic control duty and drivers of motor and other vehicles.

(iii) In a properly ventilated garage there would be no danger to health from the exhausts of motor vehicles, or from the evaporation of Ethyl Petrol owing to spillage. Even in a badly ventilated garage the danger due to spillage would not be serious. We wish, however, again to repeat the warning given in our Interim Report that adequate ventilation of all garages, whether or not Ethyl Petrol is used, is a matter of considerable importance, and that the danger from carbon monoxide in an unventilated garage is very serious.

[fol. 84] (iv) The risk arising from the absorption of lead tetra-ethyl owing to the contact of Ethyl Petrol with the skin is so small as to be negligible.

(v) While the deposits from cylinder heads, etc., of cars using Ethyl Petrol contain a high percentage of lead, the quantity and nature of these deposits are such as to make them of little significance to garage workers, if due regard is had to ordinary cleanliness.

(vi) There is no danger to water supplies from the use of Ethyl Petrol.

In view of the conclusions set out above we are of the opinion that there are no reasons for prohibiting the use of Ethyl Petrol in this country and we do not recommend any legisla-

tive action so long as the terms of the contract between the proprietors of the fuel and the distributors in this country secure the continued observance of certain precautions. These precautions are:

(i) That cans and pumps should be labelled to indicate the presence of lead in the fuel and to warn the user to avoid spillage and not to use the fuel for other purposes than motor fuel.

(ii) That the fuel should be dyed as an additional check against its use otherwise than as a motor fuel.

(iii) That the amount of lead tetra-ethyl in the fuel sold for ordinary commercial purposes should not exceed 1 part in 1,300 parts by volume or about 1 in 650 by weight."

15. No minimum octane requirement is imposed by defendants with respect to regular gasoline containing fluid. [fol. 85] Substantially all such gasoline is between 68 and 70 octane number. The requirements imposed in the refiners' licenses with respect to distillation, sulphur, corrosion and gum qualities (see Exhibit 9-A hereto) are such as would normally be met by any gasoline of good quality. Substantially all Ethyl gasoline is between 76 and 80 octane number, the major part averaging about 78 octane number.

16. Defendant corporation's jobber licenses purport to impose the restriction that gasoline containing fluid should not be diluted or otherwise adulterated. Dilution or adulteration has not in practice been found to occur (so far as defendants have been able to ascertain) to any but a very small extent so far as regular gasoline treated with fluid is concerned. Dilution or adulteration of regular gasoline treated with fluid with untreated gasoline of similar general characteristics is difficult to detect, but dilution with gasoline of distinctly inferior quality or with kerosene may be readily detected. When dilution or adulteration of regular gasoline has been discovered, it has ordinarily been necessary only to report the matter to the refiner whose gasoline was involved, in view of the refiner's interest in maintaining the quality of his product.

A number of instances have been found where jobbers or their retail dealers have been selling treated gasoline, sometimes Ethyl and sometimes regular, through pumps which did not carry lead warning signs, and where there has been

dilution of Ethyl gasoline as sold to the public, substitution of untreated for treated gasoline in pumps bearing lead warning signs, and deterioration of Ethyl gasoline through [fol. 86] long storage in jobbers' or dealers' tanks; and defendant corporation, particularly through its field representatives, has made it a practice to investigate such instances and to endeavor to prevent the occurrence or recurrence of the same on the part of licensed jobbers or their dealers.

17. Since April, 1929 each applicant for a jobber license has been investigated by a field representative of defendant corporation. Numerous field representatives are employed by defendant corporation and are located throughout the United States. Said representatives exercise wide discretion in recommending the granting or refusal of jobber licenses. The recommendation of a field representative determines largely whether a license will be issued. Said field representatives are required to report upon their investigations on certain report forms. Exhibit 17-A is the form which has been employed with immaterial changes from April, 1929 to January, 1935. Exhibit 17-B is the form which has been in use since January, 1935. Said reports are submitted by the field representatives to the respective division managers, and are by the division managers forwarded for final approval to the head office of the company in New York City. Following the customary practice of the company, the field representatives usually have not set forth the reasons why recommendations have been made against the issuance of licenses. To a large extent this was due to the reluctance on the part of defendant corporation to preserve in its records the extent to which maintenance of gasoline prices and marketing policies by jobbers entered into the granting of licenses. Officials of the company charged with [fol. 87] reviewing said jobber reports have almost invariably adopted the recommendation of the field representative when approved by his Division Manager. In 90% to 95% of all cases the approval or disapproval of the Division Manager was indicated only by the word "yes" or the word "no" on the face of the report. Usually and only excepting in some cases where the division manager had independent knowledge of pertinent facts, the action of the division manager in approving the report of the field representative was perfunctory in character. Usually no records other than the reports themselves have been made or pre-

served disclosing the reasons why jobber licenses have been refused. A copy of instructions issued to field representatives in 1931 and of supplemental instructions issued in 1932 is attached hereto as Exhibits 17-C and 17-D respectively. The defendant corporation has not made a practice of giving detailed written instructions to its field representative on any subject, including the conduct of jobber investigations or the considerations to which weight should be given in such investigations. The amount of reliance placed by defendant corporation and its officers and employees on the so-called business ethics of jobbers has normally not been disclosed in their records and communications.

18. From April, 1929 to January, 1935, as appears in Exhibit 17-A, one of the questions appearing on the form of jobber report related to the "business ethics" of the jobber applicant. Said term has been employed by defendants to denote compliance with marketing policies and prevailing prices of the petroleum industry as described in paragraph 21. In January 1935, said question with reference to busi- [fol. 88] ness ethics was eliminated from the form of jobber report, as appears in Exhibit 17-B. But the "business ethics" of the jobber has continued to be among the principal subjects of investigation, the findings of the field representatives with respect thereto being incorporated in the recommendations of the field representatives for or against the issuance of a license, made at the end of the report. An adverse finding upon the business ethics of a prospective jobber licensee is alone in many instances sufficient ground for defendant corporation to refuse such jobber a license. The greatest number of jobber applicants who were denied licenses were turned down on the basis of adverse findings of field representatives as to "business ethics." In a number of instances where licenses were granted to jobbers whose practices were previously considered unsatisfactory, they were granted after representation that the jobber's marketing practices would be changed. In at least an equal number of instances licenses were refused by defendants after similar representation.

Gasoline treated with fluid deteriorates with prolonged storage. Some applications for Ethyl jobber licenses and a few for regular gasoline jobber licenses have been refused because the volume of business of the jobber was not sufficient, in the opinion of defendant corporation, to move the

gasoline with sufficient rapidity to avoid deterioration in storage. A number of jobber licenses have been refused because in the opinion of defendant corporation the physical equipment of the jobber lent itself to the actual or accidental mixing of different grades or brands of gasoline or because [fol. 89] in the opinion of defendant corporation the retail outlets of the jobber were shabby or disreputable in appearance or location, or because in the opinion of defendant corporation the jobber's reputation in his community was bad, or because in the opinion of defendant corporation the jobber had a record of tax evasion, dilution, substitution, or misbranding. Employees of defendant corporation would testify that in passing upon applications for jobber licenses they were guided by their respective individual judgments as to what was in the best interests of the corporation in reference to the good will of the corporation with its refining licensees or the public.

19. Supplementary investigations of licensed jobbers are made from time to time and reports thereon made on the same report forms (Exhibits 17-A and 17-B hereto) as are used for the initial investigations.

20. Testimony of witnesses for the government would tend to establish that a large number of refiners and a majority of jobbers believe that a jobber must maintain "business ethics" in order to obtain a license, and that a number of jobbers believe that jobber licensees are required to maintain the prices and abide by the marketing practices and policies of the major oil companies. Defendants have not issued any statement or instructions to the effect that they would cancel licenses for such reason, and there has been and is a great deal of cutting of p ices below the posted prices on the part of licensed refiners, including major oil companies and licensed jobbers.

[fol. 90] 21. Defendants have refused to issue licenses to a number of jobbers who, investigation showed, were not abiding by the marketing policies prevailing or ostensibly prevailing in the industry or who were not maintaining the retail prices on gasoline posted generally in the industry or whose retail dealers were not maintaining said prices. Such marketing policies and posted prices were those adopted by the major oil companies or the market leaders among such companies, the major oil companies refining about

85 per cent of the gasoline sold in the United States and distributing the major portion of the gasoline sold throughout the United States through their own outlets and through jobbers. The operations of jobber licensees have been investigated by defendant corporation as hereinafter set forth to determine the method of securing supplies, gallonage, pump markings, facilities of bulk plant and nature of other physical equipment, number, character and appearance of outlets, sales effort, and whether the said licensees were maintaining the marketing policies, practices and prices prevailing or ostensibly prevailing in the industry. Defendants have issued licenses to a number of jobbers who, investigation showed, were not abiding by the prices prevailing or ostensibly prevailing in the industry or who were not maintaining retail prices on gasoline posted generally in the industry or whose retail dealers were not maintaining said prices prevailing or ostensibly prevailing in the industry. There are numerous instances where jobber licensees have not followed the marketing practices prevailing or ostensibly prevailing in the industry and where jobber licensees have not maintained retail prices posted gen- [fol. 91] erally in the industry concerning whom no action has been taken by defendants.

Some of the division managers and field representatives of defendant corporation have from time to time reported to the jobbers' suppliers that such jobbers have not been abiding by such suppliers' marketing policies and practices, and there have been sporadic instances in which representatives of defendant corporation in cooperation with the jobber suppliers, have persuaded jobbers to market gasoline in accordance with the suppliers' marketing practices.

22. 89% of the jobbers licensed by defendant corporation sold under a refiner's brand on Feb. 15, 1936, and 88% on Feb. 15, 1937, and 87% on Feb. 15, 1938, the remainder in each case selling under their own brand. Each time a jobber licensee who is selling under a refiner's brand changes his source of supply he is required to apply for a new license. Except in cases of breach of license agreement, or where the jobber's contract with the supplier had not been terminated (in which case the jobber's existing license was continued in effect) defendant corporation in most cases has granted a new license to a jobber who wanted to change his source of supply, irrespective of the jobber's mainte-

nance or non-maintenance (prior to or at the time of change) of the policies, practices, and prices of the major oil companies or market leaders. In a few instances it has not done so. Each jobber license contains a provision whereby either party is authorized to cancel such license without stating any reason therefor at any time upon thirty days' notice. Jobber licenses have not been cancelled because of the fail- [fol. 92] ure of a jobber to maintain the policies, practices, and prices of the major oil companies or market leaders.

23. On February 11, 1929 the petroleum industry adopted certain Trade Practice Conference Rules known in the industry as the Petroleum Code, attached hereto as Exhibit 23-A. On August 10, 1931, said code was modified, said modified code being attached hereto as Exhibit 23-B. As appears on Exhibits 23-A and 23-B, all of the provisions of said codes were either approved or accepted by the Federal Trade Commission. On August 19, 1933, the President approved The Code of Fair Competition for the Petroleum Industry, which was in effect until May 27, 1935. Said code is attached hereto as Exhibit 23-C. On September 5, 1937, the Federal Trade Commission issued an order, attached hereto as Exhibit 23-D, withdrawing its approval and acceptance of the Trade Practice Conference Rules adopted August 10, 1931 (Exhibit 23-B).

24. The defendant corporation has usually required that each jobber licensee purchase all his requirements of Ethyl gasoline from a single refiner-supplier of his own selection. Jobbers selling regular gasoline under their supplier's brands are required to purchase such gasoline from such supplier; otherwise jobbers selling regular gasoline may obtain their gasoline from any licensed supplier. The defendant corporation has in some cases refused a license to a jobber who desired to change his source of supply upon the ground that such jobber was, or was claimed by the refiner-supplier to be, under contract to purchase his Ethyl [fol. 93] or regular gasoline from an existing refiner-supplier, and that the request, if granted, would in the opinion of the defendant corporation have breached such contract or claimed contract. In a few of these cases the jobber has contended that his contract with the existing refiner-supplier had already been abrogated or for other reasons was not enforceable against him.

25. Since 1924 as to "Ethyl" and since 1933 as to "Q", defendant corporation has been and is the original and the exclusive user of trade-marks embodying the words "Ethyl" and "Q" as applied to fluid. All containers of fluid sold bear either the word "Ethyl" or the word "Q". Copies of registrations in the United States Patent Office, which are owned by defendant corporation, are attached hereto as follows:

Exhibit 25-A—Registration No. 187,410
Exhibit 25-B—Registration No. 202,275
Exhibit 25-C—Registration No. 215,282
Exhibit 25-D—Registration No. 292,242.

All licensees, except Standard Oil Company (New Jersey), include the word "Ethyl" as a part of the brand name under which Ethyl gasoline is sold, said company using the trade name "Esso" for most of its Ethyl gasoline and the name "Spartan Ethyl" for the rest of its Ethyl gasoline. All licensees are required to display the registered trade-mark design, Exhibit 25-C, whenever they sell, offer to sell or advertise Ethyl gasoline. No persons except such licensees and their customers have been or are users of the word "Ethyl" or of such trade-mark design for gasoline and the only gasoline for which such word and design have [fol. 94] been used is Ethyl gasoline as identified in this stipulation. Defendant corporation has also registered the word "Ethyl" and the aforesaid design, under state laws, in every state of the United States except one (Wisconsin), copies of the registrations in the State of New Jersey which may be taken as typical of all said state registrations, being attached hereto as Exhibits 25-E and 25-F. Since June, 1926 defendant corporation has carried on a large amount of advertising of the Ethyl trade-mark and Ethyl gasoline, including full page advertisements appearing frequently each year in a large number of popular magazines; and including billboard advertising. The refining licensees of defendant corporation have done a large amount of advertising of their respective brands of Ethyl gasoline. Numerous users of gasoline would testify that the name "Ethyl" and the aforesaid trade-mark design have become associated in their minds with high quality gasoline of high anti-knock qualities and that Ethyl indicates to them

the use of lead in gasoline. Defendant corporation has devoted efforts to promoting the use of regular gasoline by fleet owners (i. e., owners of truck, taxi, bus and like fleets) and other large users, oftentimes, in such promotional work, designating such gasoline as "Q" gasoline.

Exhibit 25-G, attached hereto, comprises copies of advertisements of regular gasoline (treated with fluid) which have been published in newspapers throughout the United States by licensees of defendant corporation; the advertisements in Exhibits 25-G, which were published as appearing thereon, being representative of a great many [fol. 95] similar advertisements, similarly describing regular gasoline, which have been published by many of defendant corporation's licensees (both refiners and jobbers) at those and other times, in a large number of newspapers and other periodicals (and on billboards and other media) throughout the country. Exhibit 25-H, attached hereto, comprises copies of advertisements published by defendant corporation in various magazines and newspapers, some of circulation to farmers and in rural districts, and others of urban and general circulation; the advertisements in Exhibit 25-H, which were published as appearing thereon, being representative of many similar advertisements,—similarly referring to the defendant corporation's manufacture of anti-knock fluid and tetraethyl lead, for regular gasoline,—which have been similarly published by defendant corporation in the years 1934, 1935 and 1936 and also since 1936. On occasion, filling station attendants, garage proprietors and workmen, automobile dealers and mechanics, and others having to do with the sale or recommendation of gasoline, have advised members of the gasoline-purchasing public that regular gasoline, as dispensed from pumps containing the lead warning sign, is "just about the same as Ethyl gasoline", or contains the same anti-knock ingredients as Ethyl gasoline, or contains lead "made by the Ethyl Gasoline people", or is "like Ethyl gasoline", or contains lead like Ethyl gasoline; or have otherwise passed on to the public, by word of mouth, their knowledge or belief that regular gasoline, dispensed from pumps containing lead warning signs, is related in some manner to Ethyl gasoline or to defendant corporation.

[fol. 96] The lead warning signs, Exhibits 14-C and 14-D (supplied by defendant corporation at a charge of seven

cents apiece), are used interchangeably on pumps dispensing Ethyl and regular gasoline, so that every filling station pump which dispenses Ethyl or regular gasoline treated with fluid has or should have one or more of these signs, disposed thereon in accordance with the proposed regulations of the Surgeon General. In recent years, lead signs of the type of Exhibit 14-D have been most used, and are now regularly supplied, for both Ethyl and "regular" pumps,—unless special request is made for the type 14-C, as where a new sign is desired for a pump already drilled to receive the sign 14-C. Except in instances not authorized by defendant corporation, the only gasoline dispensed to the public from filling station pumps which bear lead warning signs is gasoline treated with fluid manufactured by defendant corporation. The common practice of filling stations is to have the pumps for Ethyl and regular gasoline side by side, with the warning sign Exhibit 14-D similarly displayed on each; Exhibit 25-I, attached hereto, comprising photographs of typical pump arrangements in filling stations.

26. Each of the acts and practices of defendant corporation herein referred to has been done with or through, or under the authority, express or implied, of defendants, Webb and Taylor, except as otherwise noted herein.

27. While defendant corporation's license agreements are paraphrased in part herein, it is not intended to vary in [fol. 97] any respect the language of said agreements, to which final resort shall be had in the event of any dispute as to the interpretation of said agreements expressed in this stipulation.

John Henry Lewin, Hammond E. Chaffetz (W. B. Watson Snyder, Grant W. Kelleher, Special Assistants to the Attorney General.

Thurman Arnold, Assistant Attorney General; Lamar Hardy, United States Attorney.

Cooper, Kerr & Dunham, Solicitors for Defendants. Of Counsel: Drury W. Cooper, Harold W. Norman, Robert S. Dunham.

Dated: April 22, 1938.

[fol. 98] In United States District Court, Southern District of New York

E 84-321

United States of America, Petitioner,

against

Ethyl Gasoline Corporation, Earle W. Webb and John Coard Taylor, Defendants

Honorable Lamar Hardy, by John Henry Lewin, Esq., Hammond E. Chaffetz, Esq., W. B. Watson Snyder, Esq., Grant W. Kelleher, Esq., Nelson A. Scharfman, Esq., Thurman Arnold, Esq. and Samuel E. Darby, Jr., Esq., for the Petitioner.

Messrs. Cooper, Kerr & Dunham, by Drury W. Cooper, Esq., Harold W. Norman, Esq. and Robert S. Dunham, Esq., for Defendants.

Opinion

Boxdy, District Judge:

This is a suit in equity by the United States to enjoin the Ethyl Gasoline Corporation and its president and vice-president in charge of sales, from violating the Sherman Anti-Trust Act of July 2, 1890. The case has been submitted upon an agreed statement of facts.

[fol. 99] The defendant corporation is engaged in the production and sale of a fluid, consisting principally of tetraethyl lead. This fluid is used in increasing the octane, or anti-knock, rating of gasoline. The mixture of this fluid with gasoline reduces or eliminates the knocking that normally occurs when a mixture of gasoline and air is burned in an automobile engine of relatively high compression.

The defendant corporation is the sole producer of tetraethyl lead fluid in the United States. It is the owner of United States letters patent which cover the anti-knock fluid, the combination consisting of the fluid and gasoline, and the method whereby a mixture of gasoline and air is burned in a motor of relatively high compression, in the presence of vapors of an anti-knock ingredient. No other substance similar to tetraethyl lead fluid is manufactured

or sold commercially. There are other competitive methods by which a high octane value of gasoline may be obtained. Most refiners, however, find it economical and advantageous to obtain a part of the anti-knock value of their regular and premium gasoline by the use of fluid. Approximately 70% of all gasoline manufactured and sold in the United States is treated with fluid, and approximately 85% of all gasoline sold in the United States which has been processed [fol. 100] so as to obtain a high octane rating is treated with fluid.

The defendant corporation does not manufacture, refine or sell any gasoline. It manufactures fluid and sells it only to refiners licensed by it, who mix the fluid with their own gasoline pursuant to the regulations and directions prescribed by the defendant corporation. It derives its profits, which are very substantial, solely from the sale of fluid.

The greater part of all gasoline manufactured at refineries and the greater part of all gasoline treated with fluid, is sold and transported in interstate commerce from the states in which the refineries are located into each of the other states of the United States.

The refining companies sell gasoline partly through wholesale and retail outlets owned and controlled by them. They also sell gasoline to independent retail dealers and consumers and to jobbers for resale to retail dealers and consumers. There are approximately 12,000 jobbers in the United States. They distribute a substantial part of all the gasoline sold and distributed in this country.

The defendant corporation has issued licenses to approximately 123 refiners, who together refine and sell about 88% of all the gasoline sold in the United States. All but one of the major refiners in this country have entered into such license agreements and all but two of the licensees [fol. 101] treat with fluid substantially all of their regular or so-called house brands of gasoline. Defendant corporation licenses the refiners to produce "Ethyl" gasoline and "regular" gasoline, by treating their gasoline with the fluid manufactured and sold by it. Ethyl gasoline has a higher octane rating than regular lead-treated gasoline. The former contains approximately one part of fluid to 1700 parts of gasoline and the latter one part of fluid to 4200 parts of gasoline. About 94% of all gasoline treated with fluid is regular gasoline.

The license agreements with the refiners require each refiner to maintain a minimum differential in price between his Ethyl gasoline and his best non-premium grade of gasoline, and provide that regular gasoline treated with fluid shall be sold as the next highest priced motor fuel below the refiner's Ethyl gasoline and shall be the refiner's best non-premium gasoline.

The refiners are permitted under their licenses to sell treated gasoline to such jobbers only as are licensed by defendant corporation to distribute treated gasoline. This provision has almost invariably been complied with by the refiner licensees. Jobbers desiring licenses are required to make application therefor through their prospective refiner-suppliers, who submit such applications to the defendant [fol. 102] corporation. It issues separate licenses to jobbers for distributing Ethyl and regular treated gasoline. Approximately 11,000 of the 12,000 jobbers in the country have been granted such licenses. Numerous applications for jobber licenses have been denied. Many licenses were granted to persons to whom licenses were at first denied. Apart from the issuance of licenses to jobbers, the only business relations of defendant corporation with jobbers are in connection with the promotion of sales by jobbers of treated gasoline and the investigation of jobbers.

When tetraethyl fluid was first introduced, the question arose whether the manufacture, distribution and use of the fluid and of treated gasoline might not create a serious health hazard. An investigation was conducted by distinguished scientists appointed by the Surgeon General of the United States, who found that there was no serious menace to health if certain precautionary measures were taken. In conformity with the recommendations of the United States Public Health Service, the license agreements with jobbers provide that jobber licensees shall maintain on pumps from which treated gasoline is dispensed, notices that the gasoline contains lead and is for use as a motor fuel only.

The jobber licenses prohibit dilution and adulteration of the treated gasoline. On the rare occasions when dilution [fol. 103] or adulteration of regular treated gasoline has been discovered by the defendant corporation, it has ordinarily been necessary only to report the matter to the refiner-supplier, in view of the latter's interest in the quality of his product. Defendant corporation customarily investi-

gates instances where the lead warning signs have not been placed upon the dispensing pumps, and where untreated gasoline has been substituted for treated gasoline in pumps bearing such signs. It also seeks to prevent dilution of Ethyl gasoline and deterioration of such gasoline through long storage in jobbers' or dealers' tanks.

The Ethyl Gasoline Corporation is the exclusive user of trade-marks embodying the words "Ethyl" and "Q" as applied to fluid. All licensees except one, include the word "Ethyl" as a part of the brand name under which Ethyl gasoline is sold. All licensees are required to display defendant corporation's registered trade-mark design whenever they sell, offer to sell or advertise Ethyl gasoline. Defendant corporation has registered this design and the word "Ethyl" in every state of the United States except one. It has extensively advertised the Ethyl trade-mark and Ethyl gasoline, and the refiner licensees have extensively advertised their respective brands of Ethyl gasoline. [fol. 104] The defendant corporation, however, obligates its refiner and jobber licensees not to use its trade-marks, designs, or its name in the sale, offering for sale or advertising of regular lead-treated gasoline. It is stipulated that numerous users of gasoline would testify that the name "Ethyl" and the trade-mark design have become associated in their minds with high quality gasoline of high anti-knock qualities and that Ethyl indicates to them the use of lead in gasoline.

Since April, 1929 each applicant for a jobber license has been investigated by a field representative of the defendant corporation. These representatives exercise wide discretion in recommending the granting or refusal of jobber licenses and their recommendations largely determine whether a license will be issued. Officials of the corporation charged with reviewing these jobber reports have almost invariably adopted the field representative's recommendation when approved by his division manager. The action of the division manager in this regard is usually perfunctory.

A manual issued by the corporation to its field representatives states that the reason for investigations prior to the issuance of license agreements is to ensure that all marketers of Ethyl gasoline will be of a high type and will be [fol. 105] people who will maintain the quality of the gasoline, protect the reputation that the Ethyl corporation has

established for its product and will not resort to unethical methods in competing with other licensed jobbers and refiners.

Following the corporation's customary practice, its field representatives usually have not set forth the reasons why recommendations have been made against the issuance of licenses, largely due to its reluctance to preserve in its records the extent to which maintenance of gasoline prices and marketing policies by jobbers entered into the granting of licenses. Usually no records other than the reports themselves have been made or preserved disclosing the reasons why jobber licenses have been refused. The extent of the reliance placed by the corporation on the "business ethics" of jobbers has normally not been disclosed in its records and communications. Defendants employed the term "business ethics" to denote compliance with marketing policies and prevailing prices of the petroleum industry.

From April, 1929 to January, 1935 one of the questions appearing on the form of jobber report related to the "business ethics" of the jobber applicant. In January, 1935, this question was eliminated from the form of the jobber report, but the "business ethics" of the jobber have continued to [fol. 106] be among the principal subjects of investigation. The findings of the field representatives with respect thereto are incorporated in the recommendations for or against the issuance of a license, made at the end of the report.

An adverse finding upon the "business ethics" of a prospective jobbers licensee is alone in many instances sufficient ground for defendant corporation to refuse such jobber a license. The greatest number of jobber applicants who were denied licenses (and numerous applications have been denied) were rejected on the basis of adverse findings of field representatives concerning the jobbers' "business ethics." In a number of instances where licenses were granted to jobbers whose practices were previously considered unsatisfactory, they were issued after representation that the jobber's marketing practices would be changed. In at least an equal number of instances, licenses were refused by defendants after similar representations.

It is also stipulated that defendants have refused to issue licenses to a number of jobbers who, investigation showed, were not abiding by the marketing policies prevailing or ostensibly prevailing in the industry or who were not maintaining the retail prices on gasoline posted generally in

the industry (that is, the policies of, and prices posted by, [fol. 107] the major oil companies or the market leaders among such companies) or whose retail dealers were not maintaining such prices.

It is stipulated that testimony of witnesses for the Government would tend to establish that a large number of refiners and a majority of jobbers believe that a jobber must maintain "business ethics" in order to obtain a license, and that a number of jobbers believe that jobber licensees are required to maintain the prices and abide by the marketing practices and policies of the major oil companies.

Supplementary investigations of licensed jobbers are made from time to time by the defendants and reports thereon made on the same report forms as are used for the initial investigation. The operations of jobber licensees have been investigated partly to determine whether they were maintaining the marketing policies, practices and prices prevailing or ostensibly prevailing in the industry. In the corporation's instructions to its field representatives, it states that through these supplementary investigations it has been able to correct the Ethyl marketing picture to a considerable extent and has succeeded in eliminating from its jobber lists some of its former accounts which were not a credit to it.

Some of the division managers and field representatives have from time to time reported to the jobbers' suppliers that jobbers have not been abiding by the suppliers' market- [fol. 108] ing policies and practices, and there have been sporadic instances in which representatives of defendant corporation in cooperation with the suppliers, have persuaded jobbers to market gasoline in accordance with the suppliers' marketing practices.

Some applications for Ethyl jobber licenses and a few for regular gasoline jobber licenses have been refused because the volume of business of the jobber was not sufficient, in the opinion of defendant corporation, to move the gasoline with sufficient rapidity to avoid deterioration in storage. A number of jobber licenses have been refused because in the opinion of defendant corporation the physical equipment of the jobber lent itself to the actual or accidental mixing of different grades or brands of gasoline, or the retail outlets of the jobber were shabby or disreputable in appearance or location, or the jobber's reputation in his community

was bad, or the jobber had a record of tax evasion, dilution, substitution or misbranding.

Defendant corporation has issued licenses to a number of jobbers who, investigation showed, were not abiding by the prices prevailing or ostensibly prevailing in the industry or who were not maintaining retail prices on gasoline posted generally in the industry or whose retail dealers were not [fol. 109] maintaining the prices prevailing or ostensibly prevailing in the industry.

Defendant corporation has investigated the operations of jobber licensees to determine the method of securing supplies, gallonage, pump markings, facilities of bulk plant and nature of other physical equipment, number, character and appearance of outlets and sales effort.

Defendants have not issued any statement or instructions to the effect that they would cancel licenses for the failure to maintain "business ethics" and there has been and is a great deal of cutting of prices below the posted prices on the part of licensed refiners, including major oil companies, and licensed jobbers. Jobber licenses have not been cancelled because of the failure of a jobber to maintain the policies, practices and prices of the major oil companies or market leaders. There are numerous instances where jobber licensees have not followed the marketing practices prevailing or ostensibly prevailing in the industry and where jobber licensees have not maintained retail prices posted generally in the industry concerning whom no action has been taken by defendants. Except in cases of breach of license agreement, or where the jobber's contract with his supplier had not been terminated (in which case the jobber's [fol. 110] existing license was continued in effect) defendant corporation in most cases has granted a new license to a jobber who wanted to change his source of supply, irrespective of the jobber's maintenance or non-maintenance of the policies, practices and prices of the major oil companies of market leaders. In a few instances it has not done so.

The petition prays that the monopoly, combination and conspiracy described therein be declared illegal and in violation of the Sherman Anti-Trust Act; that the defendants be enjoined from continuing the unlawful practices described and, particularly, from exacting agreements from the refiners limiting the sale of lead-treated gasoline to such jobbers only as defendants license or otherwise designate, and from requiring jobbers to procure licenses.

The Government in its brief states that "this case is concerned only with the legality of that part of the defendants' licensing system and practices which relates to gasoline jobbers, whereby refiner licensees have each agreed with defendant corporation to sell fluid treated gasoline to such jobbers only as have received licenses from the defendant corporation."

The Government contends that the defendants have imposed unlawful restraints first, upon jobbers to whom licenses have been issued, by compelling them to participate [fol. 111] in agreements or understandings to maintain resale prices, and second, upon jobbers to whom licenses have been denied, who have been excluded from the market as a result of defendants' agreements with the refiner licensees.

First. A price maintenance agreement between a manufacturer or trader and his dealers is forbidden by the Sherman Act. Dr. Miles Medical Co. v. John D. Park & Sons Co., 220 U. S. 373. The interdiction of the statute extends to informal agreements implied from a course of dealing or other circumstances. United States v. A. Schrader's Son, Inc., 252 U. S. 85; Federal Trade Commission v. Beech-Nut Packing Co., 257 U. S. 441; cf. Frey & Son, Inc. v. Cudahy Packing Co., 256 U. S. 208. No immunity is conferred by the fact that the article whose price is being regulated is a patented product. Bauer & Cie. v. O'Donnell, 229 U.S. 1; Straus v. Victor Talking Machine Co., 243 U. S. 490.

In the absence of an agreement or understanding between them, or of the suppression of the freedom of competition by methods in which the manufacturer secures the cooperation of his distributors and customers, Federal Trade Commission v. Beech-Nut Packing Co., 257 U. S. 441, 455, it is [fol. 112] not unlawful for a manufacturer to suggest resale prices to his dealers, refuse to sell goods to those who do not maintain those prices and announce to the trade that such is his policy. United States v. Colgate & Co., 250 U. S. 300; Frey & Son, Inc. v. Cudahy Packing Co., supra. These activities are considered lawful incidents of the right of a "trader or manufacturer engaged in an entirely private business freely to exercise his own independent discretion as to parties with whom he will deal." United States v. Colgate & Co., 250 U. S. 300, 307. The investigation by a manufacturer of the price policies of his dealers is not per se unlawful, Toledo Pipe-Threading Machine Co. v. Federal Trade Commission, 11 F. (2d) 337; Cream of Wheat Co. v.

Federal Trade Commission, 14 F. (2d) 40, although when combined with other significant facts, it may support a finding of unlawful price control. Federal Trade Commission v. Beech-Nut Packing Co., supra.

It is evident that while the distinctions between lawful and unlawful activities may be quite clear in theory, it is not always easy in practice to determine whether the trader has kept within the bounds of his privilege. It is unfortunate, therefore, that the present case has been submitted upon an agreed statement of facts, thus depriving the court [fol. 113] of the benefit of the direct testimony of witnesses.

The defendant corporation, although neither a manufacturer of, nor trader in, lead-treated gasoline, concededly takes an interest in and investigates, the price policies of its jobber licensees and of applicants for jobber licenses, and it is also admitted that jobbers have been refused licenses because their price policies were offensive to the defendant corporation. But although a majority of jobbers believe that a jobber must have maintained resale prices in order to obtain a jobber license and a number of them also believe that they are required to maintain prices after the issuance of a license, there is no evidence that the defendants have informed any jobber to that effect and it affirmatively appears that defendants have not issued any statement or instructions that they would cancel licenses for failure to maintain prices. Moreover, there has been and is a great deal of price cutting on the part of licensed jobbers, yet licenses have not been cancelled for that reason.

It is stipulated that in a number of instances where licenses were granted to jobbers whose "practices" were previously considered unsatisfactory, they were issued after representation that the jobbers "marketing practices" would be changed; that some of the defendant corporation's employees have from time to time reported to the jobbers' [fol. 114] suppliers that jobbers have not been abiding by the suppliers' "marketing policies and practices", and that there have been sporadic instances in which representatives of defendant corporation, in cooperation with the jobbers' suppliers, have persuaded jobbers to market gasoline in accordance with the suppliers' "marketing practices". The Government relies heavily upon these facts. But it is not certain that the "marketing policies" and "marketing practices" referred to, include "price policies", in view of the separate and apparently distinctive

use of these terms in the stipulation of facts. Although the stipulation of facts defines "business ethics" as including the "marketing policies and prevailing prices of the petroleum industry", it does not state that "marketing policies" or "marketing practices" are synonymous with "price policies".

A clear case of price maintenance thus is not made out, especially in view of the indefinite language of the stipulation. That an agreement or understanding for the maintenance of prices existed between defendants and their jobber licensees is perhaps a permissible but not a necessary conclusion from the stipulated facts. As the case can be disposed of on other grounds, it is unnecessary to pass upon this issue.

[fol. 115] Second. The Ethyl Gasoline Corporation has entered into license agreements with approximately 123 refiners, who together refine and sell about 88% of all the gasoline sold in the United States. These include all except one of the major refiners in this country. Each of the refiner license agreements provides that lead-treated gasoline may be sold to those jobbers only who are licensed by the defendant corporation and this provision is almost invariably complied with by the refiner licensees. Since the defendants have denied numerous applications for jobber licenses, many persons desiring to engage as jobbers in the sale of lead-treated gasoline, which comprises about 70% of all the gasoline manufactured and sold in the United States, have been excluded from the market. The unsatisfactory "business ethics" of the jobbers has been the principal reason for such exclusion.

This provision of the refiner license agreements clearly is in restraint of trade. Each agreement calls for cooperative action between the defendant corporation and its refiner licensee in the exclusion of unlicensed jobbers from the market. While a manufacturer or trader may refuse to deal with those who do not observe the resale prices suggested by him, he may not combine or enter into agreements [fol. 116] with intermediate distributors to cut off the supplies of such dealers. Victor Talking Machine Co. v. Kemeny, 271 Fed. 810; Straus v. Victor Talking Machine Co., 297 Fed. 791; cf. Federal Trade Commission v. Beech-Nut Packing Co., supra. Although this record may not warrant a finding that the refiner licensees have entered into a combination or conspiracy with each other and with the

defendants, the conceded facts are that one hundred and twenty-three exclusion agreements have been separately made by the defendants and their refiner licensees. Each such agreement deprives the unlicensed jobber of one source of supply, while the aggregation of agreements deprives him of all access to the lead-treated gasoline market. Defendants, through these separate agreements, have accomplished what the refiners, without the defendants' aid, could achieve only by a concerted refusal to deal with the jobbers who did not maintain "business ethics". The defendants can fare no better with their system of separate agreements than could the refiners if they formed such a combination. See Dr. Miles Medical Co. v. John D. Park & Sons, 220 U. S. 373, 408. The agreements between the defendants and their refiner licensees accordingly constitute a forbidden restraint of trade. Cf. Straus v. American Publishers' Association, 231 U. S. 222; Eastern States Retail Lumber [fol. 117] Dealers' Association v. United States, 234 U. S. 600; Binderup v. Pathe Exchange, 263 U. S. 291; United States v. American Livestock Commission Co., 279 U. S. 435; United States v. First National Pictures, Inc., 282 U. S. 44; United States v. Sugar Institute, 297 U. S. 353.

The defendants, attempting to establish the reasonableness of their actions, Standard Oil Co. v. United States, 221 U. S. 1; United States v. American Tobacco Co., 221 U. S. 106; Sugar Institute, Inc. v. United States, 297 U. S. 553; Interstate Circuit, Inc. v. United States, decided by the Supreme Court February 13, 1939, contend that they have the right to require that jobbers dealing in lead-treated gasoline be licensed, in order to preserve the trade-marks, good will and reputation of defendant corporation in lead-treated gasoline, to protect the public from adulteration and to secure compliance with the regulations proposed by the Surgeon General of the United States governing the sale of lead-treated gasoline to the public. These objectives, however, bear no relation to, and, in the absence of statutory permission, do not require or justify, the exclusion from the market of jobbers because their marketing or price policies are repugnant to the defendants. It is because the defendants have not confined themselves to the attainment of the ends mentioned but have used their licensing system for other purposes that the Government seeks to restrain their [fol. 118] licensing activities. Cf. Sugar Institute, Inc. v. United States, 297 U. S. 553, 599, 601.

Defendants maintain that they are vitally interested in protecting the health of persons handling lead-treated gasoline and in securing compliance with the regulations proposed by the Surgeon General of the United States. While it may be true, as the Government contends, that the health hazard relates to the handling of the tetraethyl fluid itself and not to the fluid-treated gasoline, the court can not say that the defendants have not a legitimate interest in the maintenance of lead warning notices on the pumps from which treated gasoline is dispensed to the public, which apparently is the only one of such health regulations applicable to the handling and distribution of treated gasoline by jobbers.

The refiner licenses contain a provision, which is not attacked in this suit, requiring refiners, first, to obligate their jobbers to comply with the health regulations and to impose similar obligations upon purchasers from them for resale, and second, to reserve the right to cancel contracts of sale in the event that the jobber does not comply with such regulations. Defendants contend that the refiner has been tried and found wanting, but this apparently was due [fol. 119] to an unwillingness on the part of refiners to conduct their own investigations of the jobbers' retail outlets. There does not appear to be any reason why this provision in the refiner license agreements can not accomplish its purpose when supplemented by investigations conducted by the defendant corporation itself, just as is presently done. The court is not concerned with determining defendants' future policies or practices regarding the enforcement of these health regulations, but the court is satisfied that the jobber licensing system is not the only method by which observance of the health regulations by jobbers can be enforced. Moreover, as the Government points out, there would seem to be a complete absence of any temptation on the part of jobbers to avoid compliance with the regulations concerning lead warning signs since these signs are supplied by the Ethyl corporation at a charge of only seven cents each.

It is equally evident that whatever interests the defendant corporation has in preventing dilution, adulteration and deterioration of treated gasoline in the hands of jobbers may be protected without any resort to the jobber license device. Cf. International Business Machines Corp. v. United States, 298 U. S. 131, 139, 140.

Defendants seek to avoid the effect of the anti-trust laws [fol. 120] and to support their requirement that jobbers be licensed on the ground that they are merely taking advantage of their patent rights, relying upon the nature of patent monopoly and the decision of the Supreme Court in United States v. General Electric Co., 272 U. S. 476.

The defendant corporation concededly is entitled to the full benefit of its patents. But the rights which attach to the ownership of a patent are not limitless. The courts have frequently defined and limited the scope of the patent monopoly.

In the General Electric case, 272 U. S. 476, 489, 490, the Supreme Court established the principle that a patentee may grant a license "upon any condition the performance of which is reasonably within the reward which the patentee by the grant of the patent is entitled to secure," and may restrict the selling of the patented article by his licensee by limiting the method of sale and the price, "provided the conditions of sale are normally and reasonably adapted to secure pecuniary reward for the patentee's monopoly." See also General Talking Pictures Co. v. Western Electric Co., 305 U. S. 124, 127. The reasoning in both cases establishes that the legality of the conditions imposed by the patentee upon his licensee is a question to be determined by the court and not, as contended by defendants, a question of [fol. 121] policy reserved for the judgment of the patentee. In the General Electric case both the patent owner and its licensee manufactured and sold the patented product. The court merely decided that the patent owner could fix the prices and prescribe the method of sale of the patented product manufactured by the licensee in order to sustain the prices at which the former sold the patented product. See E. Bement & Sons v. National Harrow Co., 186 U. S. 70; Straight Side Basket Corp. v. Webster Basket Co., 82 F. (2d) 245, 246.

The defendant corporation does not charge any royalty for the use of its patents, nor does it manufacture, refine or sell any gasoline, whether treated with fluid or not. It is engaged only in the sale of fluid and derives its profits solely from the sale of fluid to its refiner licensees. Its pecuniary interest, if any, in the marketing and price policies of the jobbers selling gasoline is obviously very remote. Cf. Dr. Miles Medical Co. v. John D. Park & Sons Co., 220 U. S. 373, 407; Bauer & Cie. v. O'Donnell, 229 U. S. 1, 16.

Moreover, the Ethyl Gasoline Corporation does not itself determine the prices or policies, the failure to abide by which has often resulted in the denial of a jobber license. They are the prices and policies established by some of the refiner licensees, apparently without consulting the defend- [fol. 122] ant corporation. There is no evidence that the refiner licensees can not adequately protect such interests as they may lawfully have in the maintenance of the resale prices of their jobber customers, without any intervention by the Ethyl corporation.

General Talking Pictures Co. v. Western Electric Co., supra, involved a limitation in a license to manufacture and sell a patented product, restricting the licensee to sales of the product for private use in radio reception, as distinguished from commercial use in talking picture equipment. Since the patentee therein retained the right to license other persons to manufacture and sell the product for use in the commercial field, the limitation obviously bore a direct relation to the patentee's pecuniary reward. The Ethyl Gasoline Corporation, however, does not restrict sales of treated gasoline by refiners to licensed jobbers so as to enable it to exploit sales to the excluded group in some other way. Rather its restrictions result in the perpetual exclusion of non-licensed jobbers from the market of lead-treated gasoline, thus depriving its refiner licensees of the opportunity to sell to the excluded group.

In so far, therefore, as the provisions of the refiner license agreements are used to exclude from the market jobbers [fol. 123] who do not maintain "business ethics", the court believes that they are not conditions "normally and reasonably adapted to secure pecuniary reward for the patentee's monopoly." United States v. General Electric Co., 272 U. S. 476, 490.

The defendant corporation attempts to identify its position with that of a manufacturer or trader and contends that, as the latter possesses the privilege of selecting his own customers, see United States v. Colgate & Co., 250 U. S. 300, so the defendant corporation may select the jobbers to be licensed, upon any basis satisfactory to itself. This argument, however, ignores the fact that the defendant corporation is not selecting its own customers when it determines what jobbers may sell lead-treated gasoline. The Ethyl Gasoline Corporation manufactures tetraethyl fluid; its sole customers are its refiner licensees. Its selection of refiner

licensees is not under attack. The jobber is in no sense a dealer in the article manufactured by this corporation. The jobber is a dealer in lead-treated gasoline, of which the defendant corporation produces merely an ingredient. It is the refiner and not the Ethyl Gasoline Corporation, who produces lead-treated gasoline. The government does not question the right of each refiner licensee to make an inde-
[fol. 124] pendent selection of his jobber customers.

The facts of the case do not fall within the permissive provisions of the amendment to section one of the Sherman Anti-Trust Act effected by the Act of August 17, 1937, 50 Stat. 693, 15 U. S. Code, Sec. 1, and the defendants do not contend that this amendment has any application to the facts of this case.

The court accordingly is of the opinion that the agreements between the Ethyl Gasoline Corporation and its refiner licensees restricting sales of treated gasoline to those jobbers only whom the former licenses, unreasonably restrain trade and are violative of the Sherman Anti-Trust Act.

The defendants accordingly will be enjoined from requiring jobbers to procure licenses for handling lead-treated gasoline and from requiring refiners to sell lead-treated gasoline to such jobbers only as defendant corporation licenses or otherwise designates.

Submit proposed findings of fact and conclusions of law in accordance herewith.

May 19, 1939.

Wm. Bondy, United States District Judge.

[fol. 125] In United States District Court

[Title omitted]

Findings of Fact and Conclusions of Law

Pursuant to Rule 52 (a) of the Rules of Civil Procedure, I find the facts specially and state separately by my conclusions of law thereon, as follows:

Findings of Fact

The parties in this cause having entered into a stipulation which provides that the issues raised by the pleadings

should be determined without the introduction of other evidence on the basis of the facts as therein stipulated, I adopt, find, and incorporate herein by reference the facts as stipulated by the parties and find:

1. By providing that the refiner licensee may sell lead-treated gasoline only to those jobbers who are licensed by the defendant corporation, each refiner license agreement calls for cooperative action between the defendant corporation and its refiner licensee in the exclusion of unlicensed jobbers from dealing or trading in lead-treated gasoline. The 123 refiner license agreements have been separately made by the defendants and their refiner licensees. Each such agreement deprives the unlicensed jobber of one source of supply, while the aggregation of agreements deprives him of all access to the lead-treated gasoline market as a jobber.

2. Many persons desiring to engage as jobbers in the sale of lead-treated gasoline, which comprises about 70% of all the gasoline manufactured and sold in the United States, have been excluded from the market by defendant corporation. The unsatisfactory "business ethics" of the jobbers has been the principal reason for such exclusion.

[fol. 126] 3. Defendant corporation in administering its jobber licensing system has not confined itself to employing it for the purpose of preserving the trade marks, good will or reputation of defendant corporation in lead-treated gasoline, protecting the public from adulteration, or securing compliance with the regulations proposed by the Surgeon General of the United States governing the sale of lead-treated gasoline to the public.

4. Exclusion from the market of jobbers because their marketing or price policies are repugnant to the defendants bears no relation to, and is not required for the purpose of, preserving the trade marks, good will or reputation of defendant corporation in lead-treated gasoline, protecting the public from adulteration, or securing compliance with the regulations proposed by the Surgeon General of the United States governing the sale of lead-treated gasoline to the public.

5. Maintenance of warning notices on the pumps from which lead-treated gasoline is dispensed to the public is the

only one of the health regulations proposed by the Surgeon General of the United States which is applicable to the handling and distribution of lead-treated gasoline by jobbers.

6. It can not be said that the defendants have not a legitimate interest in the maintenance of lead warning notices on such pumps. Defendants' system of licensing jobbers is not the only method by which observance by jobbers of the health regulations proposed by the Surgeon General can be enforced.

7. Jobbers are under no temptation to avoid compliance with the regulation proposed by the Surgeon General of the United States concerning lead warning signs, since these signs are supplied by the Ethyl corporation at a charge of only seven cents each.

8. Whatever interests the defendant corporation has in preventing dilution, adulteration or deterioration of lead-treated gasoline in the hands of jobbers may be protected without resort to the jobber licensing device.

9. The defendant corporation does not charge any royalty for the use of its patents, nor does it manufacture, refine or sell any gasoline, whether treated with ethyl fluid or not. [fol. 127] It is engaged only in the sale of ethyl fluid and derives its profits solely from the sale of ethyl fluid to its refiner licensees. The defendant corporation's pecuniary interest, if any, in the marketing and price policies of the jobbers selling lead-treated gasoline is very remote.

10. The defendant corporation does not itself determine the prices or policies, the failure to abide by which has often resulted in the denial of a jobber license. They are the prices and policies established by some of the refiner licensees.

11. There is no evidence that the refiner licensees can not adequately protect such interests as they may lawfully have in the maintenance of resale prices by their jobber customers, without any intervention by the defendant corporation.

12. The refiners, not the defendant corporation, produce lead-treated gasoline; jobbers are the customers of the refiners, not of the defendant corporation; and the latter is

not selecting its own customers when it determines what jobbers may sell lead-treated gasoline.

13. There is no evidence that the defendants have informed any jobber to the effect that a jobber must have maintained resale prices in order to obtain a jobber license or that they have informed any jobber that jobbers are required to maintain prices after the issuance of a license.

14. There has been and is a great deal of price cutting on the part of licensed jobbers, yet licenses have not been cancelled for that reason.

15. The petitioner has failed to establish a clear case of price maintenance through agreement or understanding with jobbers.

Conclusions of Law

1. The court has jurisdiction of this cause under the provisions of the Act of July 2, 1890 entitled "An Act to Protect Trade and Commerce Against Unlawful Restraints and Monopolies".

2. A manufacturer or trader may refuse to deal with those who do not observe the resale prices suggested by him, but he may not combine or enter into agreements with intermediate distributors to cut off the supplies of such dealers.

[fol. 128] 3. The defendants, through their 123 separate agreements with their refiner licensees excluding unlicensed jobbers from the market of lead-treated gasoline, have accomplished what the refiners, without the defendants' aid, could achieve only by a concerted refusal to deal with the jobbers who did not maintain "business ethics" but the defendants can fare no better with their system of separate agreements than could the refiners if they formed such a combination.

4. The question whether conditions imposed by a patentee upon a licensee are normally and reasonably adapted to secure pecuniary reward to which the patentee is entitled by reason of the patent monopoly is a question to be determined by the Court under all the circumstances of the case and is not a question of policy reserved for the judgment of the patentee.

5. Insofar as the provisions of the refiner license agreements are used to exclude from the lead-treated gasoline market jobbers who do not maintain "business ethics", they are not conditions normally and reasonably adapted to secure pecuniary reward for the defendant corporation's patent monopoly and they are not within any privileges or immunities which the patent law confers upon the defendant corporation by virtue of its patents.

6. The effective prevention of exclusion of jobbers from the business of marketing lead-treated gasoline because their price policies, marketing policies and practices are repugnant to the defendants requires that the entire jobber licensing system of defendant corporation be abolished and restrained.

7. The defendants by requiring refiner licensees to whom they sell ethyl fluid to agree to sell gasoline treated with this fluid to those jobbers only who are licensed by the defendant corporation to distribute such treated gasoline, having entered into agreements in unreasonable restraint of interstate trade and commerce, in violation of said act of July 2, 1890.

8. The petitioner is entitled to an injunction restraining the defendants from enforcing or attempting to enforce any provisions in their licensing agreements with refiners which require said refiners not to sell lead-treated gasoline to jobbers who do not hold a license from the defendant corporation.

9. The petitioner is entitled to an injunction restraining the defendants from requiring jobbers to procure licenses [fol. 129] for handling lead-treated gasoline, and from requiring refiners not to sell lead-treated gasoline to jobbers who do not hold a license from the defendant corporation, and from entering into any combination or conspiracy in restraint of interstate trade or commerce similar to that herein declared to be illegal.

Wm. Bondy, United States District Judge.

August 14th, 1939.

[fol. 130] IN UNITED STATES DISTRICT COURT FOR THE SOUTHERN DISTRICT OF NEW YORK

In Equity No. 84-321

UNITED STATES OF AMERICA, Petitioner,

vs.

ETHYL GASOLINE CORPORATION, EARLE W. WEBB and JOHN COARD TAYLOR, Defendants

FINAL DECREE

This cause having come on for hearing before this Court upon the pleadings and the agreed statement of facts, and having been argued by counsel, and the Court having filed its opinion herein on the 19th day of May 1939,

It is hereby Ordered, Adjudged and Decreed as follows:

I. That the defendants, Ethyl Gasoline Corporation, Earle W. Webb and John Coard Taylor, by requiring the refiner licensees to whom they sell the ethyl fluid which the defendant corporation manufactures to agree not to sell gasoline treated with said ethyl fluid (such gasoline being referred to herein as lead-treated gasoline) to any jobber or other reseller, who does not hold a license from the defendant corporation to sell lead-treated gasoline, have entered into agreements in restraint of interstate trade and commerce in violation of an act of Congress approved July 2, 1890, entitled "An act to Protect Trade and Commerce against Unlawful Restraints and Monopolies".

II. That the provisions of each license agreement now in effect between the defendant corporation and its refiner licensees which prohibit, or purport to prohibit, the refiner licensee from selling lead-treated gasoline to any jobber who does not hold a license from the defendant corporation to sell lead-treated gasoline are illegal, null and void, and [fol. 131] that the defendant corporation forthwith cancel said provisions and give due written notice, within twenty (20) days from the date of this decree, to each such refiner licensee that the said provisions have been cancelled and are of no effect.

III. That all licenses now outstanding issued by the defendant corporation to jobbers purporting to authorize jo-

bers to sell lead-treated gasoline are illegal, null and void, and that the defendant corporation forthwith cancel said licenses and give due written notice, within sixty (60) days from the date of this decree, to each such jobber that the license with such jobber has been cancelled and is of no effect, together with a true copy of this decree.

IV. That the defendant corporation and its officers, agents, representatives and employees, and each individual defendant, be, and they hereby are, perpetually enjoined and restrained:

(1) From enforcing or attempting to enforce any provision in any license agreement between the defendant corporation and any refiner of gasoline which prohibits or purports to prohibit the refiner licensee from selling lead-treated gasoline to any jobber, or other reseller, who does not hold a license from the defendant corporation to sell lead-treated gasoline.

(2) From including in any agreement which the defendant corporation may hereafter enter into or offer to enter into with any refiner that the refiner shall not sell lead-treated gasoline to any jobber, or other reseller, who does not hold a license from the defendant corporation to sell lead-treated gasoline.

(3) From enforcing or attempting to enforce the provisions of any agreement by which the defendant corporation licenses or purports to license any jobber, or other reseller, to sell lead-treated gasoline.

(4) From requiring or attempting to require that jobbers, or other resellers, procure a license from the defendant corporation to sell lead-treated gasoline in order to be able to buy, sell or otherwise deal in lead-treated gasoline as jobbers or as other resellers.

(5) From entering into or carrying out any agreement in restraint of interstate trade or commerce similar to the agreements declared to be illegal in paragraph I of this decree, or any combination or conspiracy of similar character.

V. That jurisdiction of this cause is hereby retained for [fol. 132] the purpose of enforcing this decree and of making such other and further orders or decrees as may become necessary herein.

VI. That the petitioner recover of the defendants its costs herein.

August 14, 1939.

(Sd.) Wm. Bondy, United States District Judge.

Notice of Entry is hereby waived.

Cooper, Kerr & Dunham, Solicitors for Defendants.

[fol. 133] In United States District Court

[Title omitted]

Order Staying Execution of Decree

Upon application of the defendants for a stay pending appeal and determination thereof, the petitioner not objecting, it is

Ordered: That execution of the final decree entered herein, and issuance of any injunction pursuant to said decree, and compliance by defendants with any provision of said decree, be and the same hereby are stayed pending final determination of this cause, either upon appeal or by expiration of the time for appeal without the defendants having taken an appeal.

(Sd.) William Bondy, United States District Judge.

August 14, 1939.

[fol. 134] Supreme Court of the United States

[Title omitted]

Petition for Appeal

Considering themselves aggrieved by the final order and decree of the District Court of the United States for the Southern District of New York, in the above-entitled cause, entered August 14, 1939, the defendants, Ethyl Gasoline Corporation, Earle W. Webb, and John Coard Taylor, hereby pray that an appeal be allowed to the Supreme Court of the United States and for an order fixing the amount of bond thereon. The Supreme Court of the United States has jurisdiction of this appeal. Judicial Code, Sec. 238,

as amended, 28 U. S. C. Sec. 345; Act of Feb. 11, 1903, c. 544, Sec. 2, 32 Stat. 823, as amended, 15 U. S. C. Sec. 29.

ASSIGNMENT OF ERRORS

And the said defendants assign the following errors in the record and proceedings in the said cause:

I

The court erred in holding that the conditions in the refiner license agreement restricting sales of the patented lead-treated gasoline to licensed jobbers are not normally and reasonably adapted to secure pecuniary reward for [fol. 135] the patentee within the rights conferred by the patent law.

II

The court erred in finding that the defendant corporation in administering its jobber licensing system had not confined itself to preserving the trademarks, good will or reputation of the defendant corporation in the patented lead-treated gasoline, protecting the public from adulteration, or securing compliance with the regulations proposed by the Surgeon General of the United States governing the sale of the patented lead-treated gasoline to the public.

III

The court erred in finding that the refusal to license jobbers because of their marketing or price policies bears no relation to the preserving of the trademarks, good will or reputation of the defendant corporation in its patented lead-treated gasoline, protecting the public from adulteration, or securing compliance with the Surgeon General's regulations.

IV

The court erred in finding, on the basis of speculative and unwarranted inferences from the stipulated facts, that the maintenance of warning notices on pumps from which the patented lead-treated gasoline is dispensed to the public is the only one of the health regulations proposed by the Surgeon General of the United States which is applicable to the handling and distribution of the patented lead-treated gasoline by jobbers.

V

The court erred in finding, in the same speculative manner, that the defendants' system of licensing jobbers is not the only method by which observance by such jobbers of such health regulations can be enforced.

[fol. 136]

VI

The court erred in finding, on improper inferences from the stipulated facts, that whatever interest the defendant corporation has in preventing dilution, adulteration or deterioration of the patented lead-treated gasoline in the hands of jobbers may be protected without jobber licenses.

VII

The court erred in concluding that the defendant corporation's pecuniary interest in the marketing and price policies of the jobbers selling the patented and trademarked lead-treated gasoline is very remote.

VIII

The court erred in failing to distinguish between the license agreements and practices with respect to the manufacture and sale of the patented lead-treated gasoline ultimately sold at retail under the Ethyl trademark owned by the defendant corporation, and the license agreements and practices concerning the patented lead-treated gasoline sold under refiner or jobber tradenames alone.

IX

The court erred in failing to recognize the pecuniary interest of the defendant corporation, as a patentee, in the distribution and sale of its patented and trade-marked lead-treated gasoline, arising out of its ownership of patents covering lead treated gasoline and the patent covering the use of lead-treated gasoline in internal combustion engines, as distinguished from its patents relating to fluid.

X

The court erred in concluding that the defendants' system of jobber licenses must be regarded as the legal equivalent of a combination among its refiner licenses with respect to distribution and sale of an unpatented product.

[fol. 137]

XI

The court erred in holding that by requiring its refiner licensees to sell only to licensed jobbers the defendants have entered into agreements in unreasonable restraint of interstate commerce.

XII

The court erred in holding that the effective prevention of exclusion of jobbers from the business of marketing the patented lead-treated gasoline because of their price policies, marketing policies and practices requires that the entire jobber licensing system of defendant corporation be abolished and enjoined.

XIII

The court erred in decreeing that the provisions in refiner license agreements prohibiting the sale by licensees of the patented lead-treated gasoline to unlicensed jobbers are illegal, null and void and in requiring their cancellation, with written notice, within twenty (20) days.

XIV

The court erred in decreeing that all jobber licenses are illegal and in decreeing their cancellation, with written notice, within sixty (60) days.

XV

The court erred in enjoining the enforcement of any provision in any refiner license agreement prohibiting the sale of the patented lead-treated gasoline to unlicensed jobbers.

[fol. 138]

XVI

The court erred in enjoining, in Paragraph IV (5) of the decree, any license agreement by which the defendant corporation licenses or purports to license any jobber or other reseller to sell lead-treated gasoline.

XVII

The court erred in enjoining any attempt to require that such jobbers or other resellers procure a license in order to be able to buy, sell or otherwise deal in lead-treated gasoline.

XVIII

The court erred in disregarding in its decision and decree the unquestioned claims of the four patents owned by the defendant corporation, from which derive the rights and privileges, accorded by the patent law, to control the manufacture, sale, or use of the patented lead-treated gasoline and the patented method of using it in internal combustion engines.

XIX

The court erred in illegally limiting during the remaining life of the patents the manner and method whereby they may be utilized and in restricting the full pecuniary reward which the defendant corporation might obtain through their ownership.

XX

The court erred in failing to consider the defendant corporation's trademark rights derived from its ownership of lawful trademarks covering the sale of the patented lead-treated gasoline.

[fol. 139]

XXI

The court erred in issuing an injunction on the basic of speculative inferences from the stipulated facts.

Prayer for Reversal

For which errors the defendants, Ethyl Gasoline Corporation, Earle W. Webb, and John Coard Taylor pray that the said decree of the District Court of the United States for the Southern District of New York, entered August 14, 1939, in the above entitled cause, be reversed and the petition dismissed; that the amount of the cost bond to be given by appellants be fixed; that citation issued to the appellee named above; and for such other and further relief to which appellants may be entitled.

Respectfully submitted, Dean Acheson, Attorney for Appellants.

October 9, 1939.

[fol. 140] SUPREME COURT OF THE UNITED STATES

[Title omitted]

ORDER ALLOWING APPEAL

The appellants in the above entitled cause, and each of them, have prayed for the allowance of an appeal in this cause to the Supreme Court of the United States from the decree made and entered in the above entitled cause by the District Court of the United States for the Southern District of New York on the fourteenth day of August, 1939, and from each and every part thereof, and have presented and filed their petition for appeal, assignment of errors, prayer for reversal, and statement as to jurisdiction pursuant to the statutes of the United States and the rules of the Supreme Court of the United States in such case made and provided:

It Is Now Ordered That an appeal be and the same is hereby allowed to the Supreme Court of the United States from the District Court of the United States for the Southern District of New York in the above entitled cause as provided by law, and

It Is Further Ordered That the Clerk of the United States District Court for the Southern District of New York shall prepare and certify a transcript of the record, proceedings and decree in this cause and transmit the same [fol. 141] to the Supreme Court of the United States so that he shall have the same in said Court within forty days of this date, and

It Is Further Ordered That security for costs on appeal be fixed in the sum of $500.

Dated October 9th, 1939.

Wm. Bondy, United States District Judge for the Southern District of New York.

[fols. 142-143] Citation to usual form showing service on Wendell Berge omitted in printing.

[fol. 144] Bond on Appeal for $500.00 approved Oct. 9, 1939, omitted in printing.

[fol. 145] SUPREME COURT OF THE UNITED STATES

[Title omitted]

STIPULATION AS TO TRANSCRIPT OF RECORD

The parties to this cause, through their respective counsels, hereby stipulate that the portions of the record to be included in the transcript, to be prepared by the Clerk of the United States District Court for the Southern District of New York for transmission to the Clerk of the Supreme Court of the United States shall be as follows:

1. The Petition of the United States of America, filed February 19, 1937.

2. Answer of Defendants, filed June 5, 1937.

3. Stipulation dated April 22, 1938, together with two volumes of Exhibits thereto, numbered with reference to sections of the Stipulation.

4. Opinion of the Honorable William Bondy, United States District Judge, dated May 19, 1939.

5. Findings of Fact, and Conclusions of Law, entered August 14, 1939.

6. Final Decree, entered August 14, 1939, granting permanent injunction.

7. Stay order pending appeal entered August 14, 1939.

[fol. 146] 8. Petition for Appeal to the Supreme Court of the United States, Assignment of Errors, and Prayer for Reversal.

9. Statement as to Jurisdiction on Appeal.

10. Order of the Honorable William Bondy, Judge of the District Court of the United States for the Southern District of New York, allowing appeal to the Supreme Court of the United States.

11. Citation and acknowledgment of service thereof.

12. Statement required to be served on Appellee by Rule 12, Paragraph 2.

13. Bond for costs, together with approval of same.

14. Acknowledgment of service of Petition for Allowance of Appeal, with copy of Assignments of Errors and Order allowing Appeal, Statement as to Jurisdiction, and statement required by Rule 12, Paragraph 2.

15. This stipulation.

Dean Acheson, Attorney for Appellant. John Henry Lewin, Grant Kelleher, Attorneys for Appellee.

[fol. 147] SUPREME COURT OF THE UNITED STATES

[Title omitted]

STIPULATION AS TO RECORD

The parties to the above-entitled cause, by their respective counsel, hereby stipulate and agree that the attached bound volume containing

A printed copy of the Petition, consisting of 46 printed pages.

A mimeographed copy of the Answer, consisting of 11 pages.

A printed copy of the Stipulation, consisting of 37 pages.

A carbon copy of the Opinion, consisting of 27 pages.

A typewritten copy of the Findings of Fact and Conclusions of Law, consisting of 5 pages.

A typewritten copy of the Final Decree, consisting of 3 pages.

A typewritten copy of the Stay Order, consisting of 1 page.

A carbon copy of the Petition for Appeal, Assignment of Errors, and Prayer for Reversal, consisting of 6 pages.

A carbon copy of the Statement as to Jurisdiction, consisting of a cover and 8 pages, to which is appended a carbon copy of the Opinion, consisting of 11 pages.

A carbon copy of the Order Allowing Appeal, consisting of 2 pages.

A carbon copy of the Citation and acknowledgment of service thereof, consisting of 2 pages.

[fol. 148] A carbon copy of the Statement Required by Rule 12 Paragraph 2, consisting of 1 page.

A carbon copy of the bond on appeal and approval thereof, consisting of 1 page.

A carbon copy of acknowledgment of service of the Petition for Appeal, Assignment of Errors, and Prayer for Reversal; Statement as to Jurisdiction; Order allowing appeal to Supreme Court of the United States, dated October 9th, 1939; Citation dated October 9th, 1939; Statement directing attention to Paragraph 3 of Rule 12 of the Rules of the Supreme Court of the United States, consisting of 1 page.

A carbon copy of the Stipulation as to the portions of the record to be included in the transcript prepared by the Clerk of the District Court, consisting of 2 pages,

together with two bound volumes of exhibits, Volume 1 consisting of 170 pages of material and Volume II consisting of 24 pages of photostat material, constitutes a true and accurate copy of the portions of the record which the parties have heretofore stipulated should be included in the transcript to be prepared by the Clerk of the United States District Court for the Southern District of New York for transmission to the Clerk of the Supreme Court of the United States. The parties hereto, through their respective counsel, further stipulate and respectfully request that the Clerk certify the documents above specified to the Clerk of the said Supreme Court of the United States.

Dean Acheson, Attorney for Appellants, John Henry Lewin, Grant W. Kelleher, Attorneys for Appellee.

[fol. 149] In United States District Court

[Title omitted]

Stipulation as to Transcript of Record

It is hereby stipulated and agreed, that the foregoing is a true transcript of the record of the said District Court in the above entitled matter as agreed on by the parties.

Dated

Dean Acheson, Attorney for Appellants, John Henry Lewin, Grant W. Kelleher, Attorneys for Appellee.

[fol. 150] Clerk's Certificate to foregoing transcript omitted in printing.

[fols. 1-4] **Exhibits to Stipulation of Facts**

EXHIBIT 3-A

Feb. 23, 1926. 1,573,846

T. MIDGLEY, JR

METHOD AND MEANS FOR USING MOTOR FUELS

Filed April 15, 1922

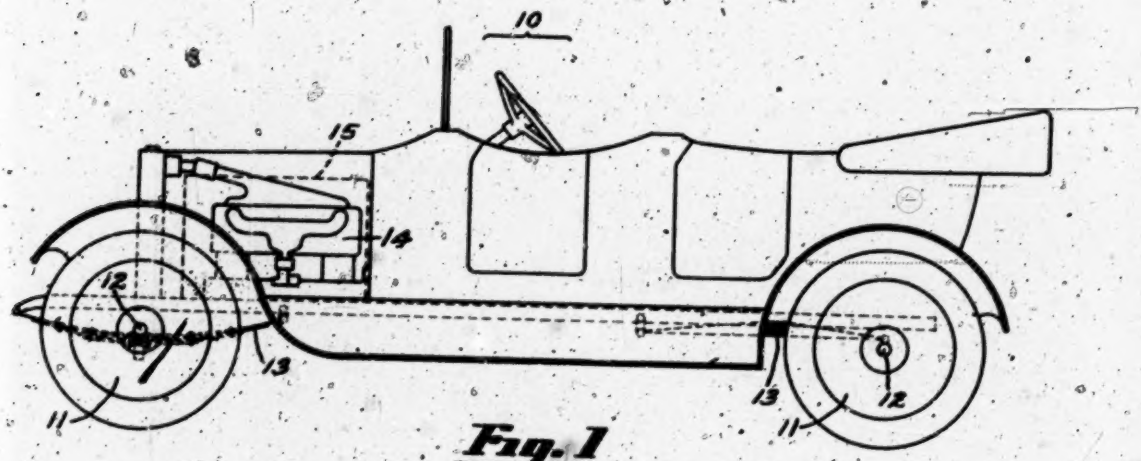

Fig. 1

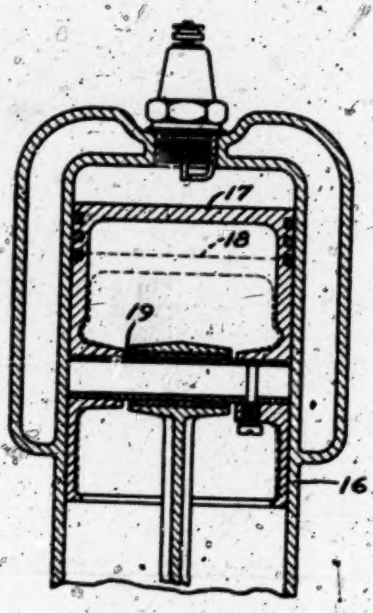

Fig. 2

Patented Feb. 23, 1926. 1,573,846

UNITED STATES PATENT OFFICE.

THOMAS MIDGLEY, JR., OF DAYTON, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO GENERAL MOTORS CORPORATION, OF DETROIT, MICHIGAN, A CORPORATION OF DELAWARE.

METHOD AND MEANS FOR USING MOTOR FUELS.

Application filed April 15, 1922. Serial No. 553,270.

To all whom it may concern:

Be it known that I, THOMAS MIDGLEY, JR., a citizen of the United States of America, residing at Dayton, county of Montgomery, and State of Ohio, have invented certain new and useful Improvements in Methods and Means for Using Motor Fuels, of which the following is a full, clear, and exact description.

This invention relates to fuels, such, for example as kerosene and gasoline, employed in the operation of internal-combustion engines and to the art of burning the fuels in an engine. The present tendency is to produce lower grades of gasoline in order to obtain a sufficient output for the increasing demand for motor fuels and to reduce the compressions of the engines so that these lower grades of fuel may be used without knocking. As the lowering of engine compression reduces the efficiency of the engine, a still greater output of fuel is required to meet the increase in fuel required to operate larger and less efficient engines. The principal objects of the present invention are to overcome these difficulties and to provide a means for using either low or high grades of motor fuel more efficiently and so reduce the quantity of fuel used.

The present application is a continuation in part of my application Serial No. 464,985, filed April 27, 1921.

In the accompanying drawings:

Fig. 1 is a side view of an automobile having an engine embodying the present invention and showing the comparative sizes of engines employed when using high and low engine compressions; and

Fig. 2 is a longitudinal sectional view of

duced, the engine heats rapidly, the efficiency of the engine is reduced and, if the initial pressure is very high, engine parts may be injured. The highest pressure at which a mixture may be burned in a cylinder without producing a fuel knock varies with the different fuels and, to some extent, with the temperature, position of spark plugs and other conditions within the engine. This pressure I term the "critical compression pressure" of the fuel.

The average critical compression pressure of kerosene is about 50 pounds, of the proper grades of gasoline about 75 pounds and of the better grades of gasoline about 125 pounds. The latter grade of gasoline is produced in limited quantities and is not available universally to the consumer. The commoner grades of fuel, such as kerosene and gasoline, having critical compression pressures below 75 pounds are used generally, and in internal-combustion engines for house lighting systems, trucks, tractors, and automobiles are designed to operate on these kinds of fuel.

I have found that the critical compression pressure of a fuel of the type mentioned above is increased by incorporating therewith any one of a large number of compounds containing metallic elements, i. e., compounded metallic elements.

By way of example, I may use a fuel consisting by volume of ¼ of one percent of tetra ethyl lead and 99¾ percent of gasoline having a normal "critical compression pressure" of about 75 pounds. The tetra ethyl lead dissolves in the gasoline forming a fuel having a "critical compression pressure" of about 160 pounds. The presence

Filed April 15, 1922

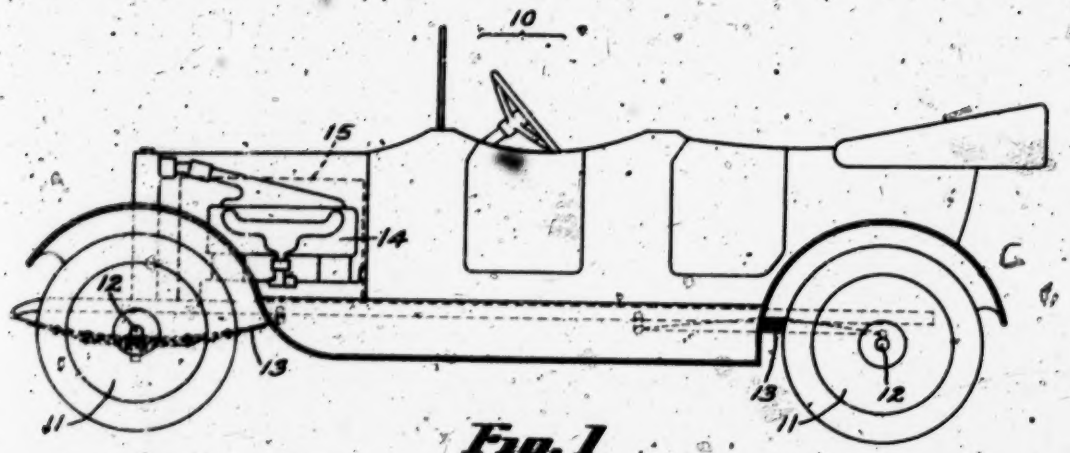

Fig. 1

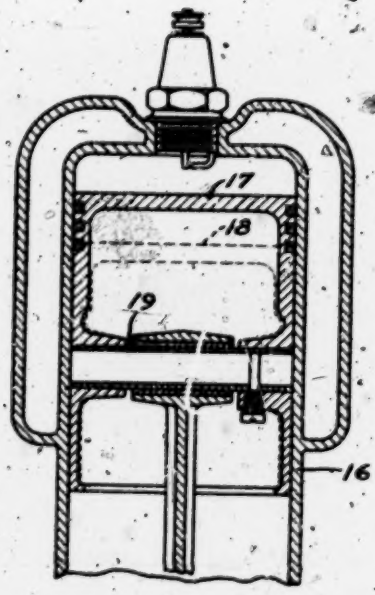

Fig. 2

Witnesses
Irvin A. Greenwald
Lloyd M. Keighley

Inventor
Thomas Midgley Jr.

By Francis D. Hardesty
Attorney

UNITED STATES PATENT OFFICE.

THOMAS MIDGLEY, JR., OF DAYTON, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO GENERAL MOTORS CORPORATION, OF DETROIT, MICHIGAN, A CORPORATION OF DELAWARE.

METHOD AND MEANS FOR USING MOTOR FUELS.

Application filed April 15, 1922. Serial No. 553,270.

To all whom it may concern:

Be it known that I, THOMAS MIDGLEY, Jr., a citizen of the United States of America, residing at Dayton, county of Montgomery, and State of Ohio, have invented certain new and useful Improvements in Methods and Means for Using Motor Fuels, of which the following is a full, clear, and exact description.

This invention relates to fuels, such, for example as kerosene and gasoline, employed in the operation of internal-combustion engines and to the art of burning the fuels in an engine. The present tendency is to produce lower grades of gasoline in order to obtain a sufficient output for the increasing demand for motor fuels and to reduce the compressions of the engines so that these lower grades of fuel may be used without knocking. As the lowering of engine compression reduces the efficiency of the engine, a still greater output of fuel is required to meet the increase in fuel required to operate larger and less efficient engines. The principal objects of the present invention are to overcome these difficulties and to provide a means for using either low or high grades of motor fuel more efficiently and so reduce the quantity of fuel used.

The present application is a continuation in part of my application Serial No 464,985, filed April 27, 1921.

In the accompanying drawings:

Fig. 1 is a side view of an automobile having an engine embodying the present invention and showing the comparative sizes of engines employed when using high and low engine compressions; and

Fig. 2 is a longitudinal sectional view of an engine cylinder and shows the comparative sizes of combustion chambers employed when using fuels having high and low critical compression pressures.

Kerosene, gasoline and the heavier hydrocarbons have the characteristic that, when a combustible gaseous mixture containing one of these fuels and air is burned in an internal-combustion engine while subjected to a relatively high pressure, a fuel knock is produced, the engine heats rapidly, the efficiency of the engine is reduced and, if the initial pressure is very high, engine parts may be injured. The highest pressure at which a mixture may be burned in a cylinder without producing a fuel knock varies with the different fuels and, to some extent, with the temperature, position of spark plugs and other conditions within the engine. This pressure I term the "critical compression pressure" of the fuel.

The average critical compression pressure of kerosene is about 50 pounds, of the proper grades of gasoline about 75 pounds and of the better grades of gasoline about 125 pounds. The latter grade of gasoline is produced in limited quantities and is not available universally to the consumer. The commoner grades of fuel, such as kerosene and gasoline, having critical compression pressures below 75 pounds are used generally, and in internal-combustion engines for house lighting systems, trucks, tractors, and automobiles are designed to operate on these kinds of fuel.

I have found that the critical compression pressure of a fuel of the type mentioned above is increased by incorporating therewith any one of a large number of compounds containing metallic elements, i. e., compounded metallic elements.

By way of example, I may use a fuel consisting by volume of ¼ of one percent of tetra ethyl lead and 99¾ percent of gasoline having a normal "critical compression pressure" of about 75 pounds. The tetra ethyl lead dissolves in the gasoline forming a fuel having a "critical compression pressure" of about 160 pounds. The presence of the lead compound changes the gasoline from a low compression fuel to a higher compression fuel, i. e., increases its "critical compression pressure." This gasoline may be used in an engine having a compression pressure of about 160 pounds, with a smaller fuel consumption for obtaining a given amount of work than is required to operate an engine having a compression pressure of 75 pounds on the untreated gas-

oline. Experiments with automobiles have shown that if the engine compression is increased to 160 pounds, a treated fuel being used to run the engine and the gear ratio between the engine and the rear axle is reduced, the mileage obtained from a gallon of gasoline is substantially twice that obtained when running the engine at 75 pounds compression on the untreated or low compression fuel.

In the drawings, 10 is an automobile having wheels 11, axles 12, springs 13, and an engine 14 whose compression pressure is about 160 pounds. This engine may be operated on the mixture of gasoline and tetra ethyl lead just described. At 15 is shown diagrammatically the comparative size of an engine operating on an engine compression of about 75 pounds and capable of delivering the same horse power as engine 14. It is apparent that by employing engine 14 instead of engine 15, the size and weight of the wheels, axles and other parts of the automobile may be materially lightened, and that by lightening the weight of the machine as a whole a still smaller engine may be employed to propel the vehicle.

Fig. 2 illustrates a method of changing the compression of an engine to obtain these results. In this figure, 16 is an engine cylinder and 17 the engine piston in its top dead center position in which the gaseous mixture is compressed to about 160 pounds. The dotted line 18 indicates the top dead center position of a piston which compresses the gases to about 75 pounds. A change from a low compression engine to a high compression engine may be made by substituting a piston whose length from the wrist pin 19 to the top of the piston is greater than in pistons in common use. This change in the pistons increases the horse power of the engine. Experience has shown that operation of an engine of the type illustrated in solid lines in Fig. 2, on a low compression fuel such as common gasoline, gives excessive heating, violent knocking, and under continued operation cracks the piston.

For some commercial purposes it will probably be sufficient to use but one part of tetra ethyl lead in 2000 parts of gasoline. This mixture may be used in a truck motor to avoid the knock generally produced when climbing hills at low speed with open throttle. Relatively small proportional quanti-

pression pressure. The fuels used include gasoline and other hydrocarbon fuels containing hydrocarbons which may be obtained from an asphalt, naphthene paraffine base crude or mixtures thereof.

Other lead compounds which have been used successfully are the phenyl compounds and other alkyl compounds besides the tetra ethyl lead. These include the ethyl, isopropyl and methyl compounds. Methods of manufacturing lead compounds are described on page 133 et. seq., vol. 111 of Watts' Dictionary of Chemistry as revised by Morley and Muir and published by Longmans, Green and Co., London, England.

Other metallic compounds may be used to suppress a knock in a motor. These include compounds of selenium, tellurium, tin, arsenic and antimony. The phenyl and alkyl compounds of these metals have been successfully used where the stable compounds are obtainable. The alkyl metal compounds usually have a greater knock suppressing value than the corresponding phenyl compounds.

Dissolving a knock suppressing substance in a hydrocarbon fuel has been found the most satisfactory method of changing the critical compression pressure of the fuel, and for this reason the organic compounds have been employed to a greater extent than other compounds in suppressing knocks, however, I do not limit my invention to organic compounds nor to the oil soluble compounds.

The value of metallic compounds in changing the critical compression pressure depends upon the metal used, the composition of the compound, its stability and volatility. Up to the point of complete vaporization the anti-knock value depends in part on the percentage of the compound vaporized under engine condtions. Where the nature of the compound changes before ignition of the fuel, combustion of the fuel takes place in the presence of the new compound and the anti-knock value depends on the nature of the new compound instead of the compound added to the fuel.

If a radical is attached to the metal in the compound in such a manner that the resulting compound is oil soluble and volatile, a high anti-knock value for that metal is obtained. As the compound departs from these conditions either in the kind of radical employed or the number of radicals of a

less soluble in the fuel than the tetra ethyl lead. The tri-ethyl lead hydroxide is almost as powerful a knock suppresser as the tetra ethyl lead.

The value of a compounded metallic element as a knock suppresser appears also to be a period function of the atomic number and, in general, with similar elements increases with increasing atomic weight. To illustrate this function, I take the ethyl compounds of the metals in the right hand column of the 4th, 5th, and 6th groups, wherever stable ethyl compounds are obtainable. As the ethyl compound of antimony is unstable in the air at room temperature, I employ the phenyl compound of antimony. These compounds increase in knock suppressing value in group 4 in the order tin, lead; in group 5 in the order arsenic, antimony; and in group 6 in the order selenium, tellurium. Taking group 4 as an example, 1% by volume of the ethyl compounds of the metals in gasoline or kerosene give the following increases in critical compression pressure: tin, 15 pounds; lead at the rate of 340 pounds when employed in relatively small quantities.

While I have mentioned more particularly the use of phenyl and alkyl compounds of certain metals for increasing the critical compression pressure of kerosene and gasoline, my invention is not limited wholly to the use of these compounds, nor to compounds of these metals, and the compounded metallic elements may be employed with the heavier hydrocarbon or other fuels.

Further, while the specific examples herein given constitute preferred forms of embodiment of the invention, it is to be understood that other forms might be adopted, without departing from the scope of the claims which follow.

What I claim is as follows:

1. A fuel for internal combustion engines comprising a low compression motor fuel, and a volatile compound of a metal adapted to increase the critical compression pressure of the motor fuel.

2. A fuel for internal combustion engines comprising a low compression motor fuel, and an oil soluble volatile compound of a metal adapted to increase the critical compression pressure of the motor fuel.

3. A fuel for internal combustion engines comprising a low compression motor fuel, and a relatively small amount of compound consisting of a metal bound to a hydrocarbon radical.

4. A fuel for internal combustion engines comprising a low compression motor fuel, and a relatively small amount of oil soluble compound consisting of a metal bound to a hydrocarbon radical.

6. A fuel for internal combustion engines comprising a low compression motor fuel, and a relatively small amount of a volatile and oil soluble compound consisting of a metal bound to a hydrocarbon radical.

7. A fuel for internal combustion engines comprising a hydrocarbon motor fuel containing a relatively small proportion of an alkyl compound of a metal containing more than two alkyl groups.

8. A fuel for internal combustion engines comprising a hydrocarbon motor fuel containing a relatively small proportion of an oil soluble compound of a metal containing more than two alkyl groups.

9. A fuel for internal combustion engines comprising a hydrocarbon motor fuel containing a relatively small proportion of a volatile compound of a metal containing more than two alkyl groups.

10. A fuel for internal combustion engines comprising a hydrocarbon motor fuel containing a relatively small proportion of a volatile and oil soluble compound of a metal containing more than two alkyl groups.

11. A fuel for internal combustion engines comprising a hydrocarbon motor fuel containing a relatively small proportion of an alkyl compound of a metal containing more than three alkyl groups.

12. A fuel for internal combustion engines comprising a hydrocarbon motor fuel containing a relatively small proportion of an oil soluble compound of a metal containing more than three alkyl groups.

13. A fuel for internal combustion engines comprising a hydrocarbon motor fuel containing a relatively small proportion of a volatile compound of a metal containing more than three alkyl groups.

14. A fuel for internal combustion engines comprising a hydrocarbon motor fuel containing a relatively small proportion of a volatile and oil soluble compound of a metal containing more than three alkyl groups.

15. A fuel for internal combustion engines comprising kerosene or gasoline; and a volatile alkyl compound of a metallic element homogeneously incorporated therein.

16. A fuel for internal combustion engines comprising a low compression motor fuel; and a volatile ethyl compound of a metallic element homogeneously incorporated therein and adapted to be vaporized in an internal-combustion engine before combustion of the

between the engine and the rear axle is reduced, the mileage obtained from a gallon of gasoline is substantially twice that obtained when running the engine at 75 pounds compression on the untreated or low compression fuel.

In the drawings, 10 is an automobile having wheels 11, axles 12, springs 13, and an engine 14 whose compression pressure is about 160 pounds. This engine may be operated on the mixture of gasoline and tetra ethyl lead just described. At 15 is shown diagrammatically the comparative size of an engine operating on an engine compression of about 75 pounds and capable of delivering the same horse power as engine 14. It is apparent that by employing engine 14 instead of engine 15, the size and weight of the wheels, axles and other parts of the automobile may be materially lightened, and that by lightening the weight of the machine as a whole a still smaller engine may be employed to propel the vehicle.

Fig. 2 illustrates a method of changing the compression of an engine to obtain these results. In this figure, 16 is an engine cylinder and 17 the engine piston in its top dead center position in which the gaseous mixture is compressed to about 160 pounds. The dotted line 18 indicates the top dead center position of a piston which compresses the gases to about 75 pounds. A change from a low compression engine to a high compression engine may be made by substituting a piston whose length from the wrist pin 19 to the top of the piston is greater than in pistons in common use. This change in the pistons increases the horse power of the engine. Experience has shown that operation of an engine of the type illustrated in solid lines in Fig. 2, on a low compression fuel such as common gasoline, gives excessive heating, violent knocking, and under continued operation cracks the piston.

For some commercial purposes it will probably be sufficient to use but one part of tetra ethyl lead in 2000 parts of gasoline. This mixture may be used in a truck motor to avoid the knock generally produced when climbing hills at low speed with open throttle. Relatively small proportional quantities of the lead compound are required to increase the critical compression pressure of "aviation" gasoline from 125 pounds to 160 pounds or more.

The fuel mixture or combination may also be varied by using other fuels as the fuel base or major constituent of the high compression fuel and using other compounded metallic elements to increase critical compression. Such fuels may be benzol, toluol, alcohol, acetone, ether, or crude or mixtures thereof.

Other lead compounds which have been used successfully are the phenyl compounds and other alkyl compounds besides the tetra ethyl lead. These include the ethyl, isopropyl and methyl compounds. Methods of manufacturing lead compounds are described on page 133 et. seq., vol. 111 of Watts' Dictionary of Chemistry as revised by Morley and Muir and published by Longmans, Green and Co., London, England.

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Dissolving a knock suppressing substance in a hydrocarbon fuel has been found the most satisfactory method of changing the critical compression pressure of the fuel, and for this reason the organic compounds have been employed to a greater extent than other compounds in suppressing knocks, however, I do not limit my invention to organic compounds nor to the oil soluble compounds.

The value of metallic compounds in changing the critical compression pressure depends upon the metal used, the composition of the compound, its stability and volatility. Up to the point of complete vaporization the anti-knock value depends in part on the percentage of the compound vaporized under engine condtions. Where the nature of the compound changes before ignition of the fuel, combustion of the fuel takes place in the presence of the new compound and the anti-knock value depends on the nature of the new compound instead of the compound added to the fuel.

If a radical is attached to the metal in the compound in such a manner that the resulting compound is oil soluble and volatile, a high anti-knock value for that metal is obtained. As the compound departs from these conditions either in the kind of radical employed or the number of radicals of a certain kind in the compound, the anti-knock value will generally be reduced. Examples of compounds in which the anti-knock value, as based on these conditions, becomes negligible are lead oleate and lead acetate. If, in the formula for tetra-ethyl lead, an OH radical is substituted for an ethyl radical, the resulting compound (triethyl lead hydroxide) is less volatile and

be a period function of the atomic number and, in general, with similar elements increases with increasing atomic weight. To illustrate this function, I take the ethyl compounds of the metals in the right hand column of the 4th, 5th, and 6th groups, wherever stable ethyl compounds are obtainable. As the ethyl compound of antimony is unstable in the air at room temperature, I employ the phenyl compound of antimony. These compounds increase in knock suppressing value in group 4 in the order tin, lead; in group 5 in the order arsenic, antimony; and in group 6 in the order selenium, tellurium. Taking group 4 as an example, 1% by volume of the ethyl compounds of the metals in gasoline or kerosene give the following increases in critical compression pressure: tin, 15 pounds: lead at the rate of 340 pounds when employed in relatively small quantities.

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Further, while the specific examples herein given constitute preferred forms of embodiment of the invention, it is to be understood that other forms might be adopted, without departing from the scope of the claims which follow.

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2. A fuel for internal combustion engines comprising a low compression motor fuel, and an oil soluble volatile compound of a metal adapted to increase the critical compression pressure of the motor fuel.

3. A fuel for internal combustion engines comprising a low compression motor fuel, and a relatively small amount of compound consisting of a metal bound to a hydrocarbon radical.

4. A fuel for internal combustion engines comprising a low compression motor fuel, and a relatively small amount of a volatile compound consisting of a metal bound to a hydrocarbon radical.

5. A fuel for internal combustion engines comprising a low compression motor fuel, and oil soluble compound consisting of a metal bound to a hydrocarbon radical.

7. A fuel for internal combustion engines comprising a hydrocarbon motor fuel containing a relatively small proportion of an alkyl compound of a metal containing more than two alkyl groups.

8. A fuel for internal combustion engines comprising a hydrocarbon motor fuel containing a relatively small proportion of an oil soluble compound of a metal containing more than two alkyl groups.

9. A fuel for internal combustion engines comprising a hydrocarbon motor fuel containing a relatively small proportion of a volatile compound of a metal containing more than two alkyl groups.

10. A fuel for internal combustion engines comprising a hydrocarbon motor fuel containing a relatively small proportion of a volatile and oil soluble compound of a metal containing more than two alkyl groups.

11. A fuel for internal combustion engines comprising a hydrocarbon motor fuel containing a relatively small proportion of an alkyl compound of a metal containing more than three alkyl groups.

12. A fuel for internal combustion engines comprising a hydrocarbon motor fuel containing a relatively small proportion of an oil soluble compound of a metal containing more than three alkyl groups.

13. A fuel for internal combustion engines comprising a hydrocarbon motor fuel containing a relatively small proportion of a volatile compound of a metal containing more than three alkyl groups.

14. A fuel for internal combustion engines comprising a hydrocarbon motor fuel containing a relatively small proportion of a volatile and oil soluble compound of a metal containing more than three alkyl groups.

15. A fuel for internal combustion engines comprising kerosene or gasoline; and a volatile alkyl compound of a metallic element homogeneously incorporated therein.

16. A fuel for internal combustion engines comprising a low compression motor fuel; and a volatile ethyl compound of a metallic element homogeneously incorporated therein and adapted to be vaporized in an internal-combustion engine before combustion of the fuel therein.

17. A fuel for internal combustion engines comprising a low compression motor fuel; and an alkyl compound of a metal in the right hand column of a group between the third and seventh groups of Mendeleef's table.

18. A fuel for internal combustion engines comprising a low compression motor fuel; and a volatile lead compound homogeneously incorporated therein.

19. A fuel for internal combustion engines comprising a low compression motor fuel; and an alkyl compound of lead.

20. A fuel for internal combustion engines comprising kerosene or gasoline; and an ethyl compound of lead.

21. A fuel for internal combustion engines comprising gasoline; and tetraethyl lead.

In testimony whereof I hereto affix my signature.

THOMAS MIDGLEY, JR.

Certificate of Correction.

It is hereby certified that in Letters Patent No. 1,573,846, granted February 23, 1926, upon the application of Thomas Midgley, Jr., of Dayton, Ohio, for an improvement in "Methods and Means for Using Motor Fuels," an error appears in the printed specification requiring correction as follows: Page 1, line 62, for the word "proper" read *poorer;* and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 22d day of June, A. D. 1926.

[SEAL.]

M. J. MOORE,
Acting Commissioner of Patents.

[fols. 5-6] EXHIBIT 3

Patented July 20, 1926. 1,592,954

UNITED STATES PATENT OFFICE.

THOMAS MIDGLEY, JR., OF DAYTON, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO GENERAL MOTORS CORPORATION, OF DETROIT, MICHIGAN, A CORPORATION OF DELAWARE.

FUEL.

No Drawing. Application filed May 19, 1923. Serial No. 640,274.

This invention relates to the use of lead alkyl and aryl compounds in hydrocarbon motor fuels such, for example, as kerosene and gasoline, to increase the critical compression pressure of the fuel and avoid a fuel knock in an internal-combustion engine operating at compressions above the normal critical compression pressure of the fuel. The principal object of the invention is to form with the fuel and a hydrocarbon compound of lead, a combination which burns in the engine and yields a lead compound having a relatively low fluxing action as contrasted particularly with lead oxide. Fuel knock is a function of the fuel employed and the compression pressure used as contrasted with a mechanical knock, and the term "antiknock substance" as employed herein designates a compound which, when present in the combustion chamber in relatively small quantities at the time of combustion, inhibits the fuel knock.

This combination may be effected by employing with a tetra ethyl, tetra phenyl, tetra methyl, tetra amyl, or other similar compound of lead in the fuel, a chlorine compound such, for example, as carbon tetra chloride or an alkyl chloride such as amyl chloride, hexyl chloride or ethyl chloride, which supplies chlorine which combines with the lead during combustion to form a lead-chloride compound. The corresponding iodide and bromide compounds may be employed in place of the chloride compounds. A preferred method of carrying out my invention in forming this class of combination is to use a mixture (by weight) of 2 parts of carbon tetra chloride and 3 parts of lead tetra ethyl or lead tetra methyl, etc. This mixture is added to the fuel in the storage tank of a filling station or the fuel tank of a car and fed with the fuel into the combustion chamber of an engine and burned therein. One of the products of combustion is a lead halide such as, in the specific example given above, lead chloride.

Another method of carrying out my invention is to use a mixture of lead alkyl and aryl compounds with lead and a halogen; lead triethyl chloride, lead triethyl bromide and the corresponding alkyl and aryl compounds with lead and a halogen such as chlorine, iodine, or bromine.

Methods of manufacturing lead compounds are described on page 133 et. seq., Vol. III of Watts' Dictionary of Chemistry as revised by Morley and Muir and published by Longmans, Green and Co., London, England.

In these fuels, the lead and the hydrocarbon combined therewith, form the base of the anti-knock substance which suppresses a fuel knock in a mixture formed in part by a low compression fuel such as gasoline or kerosene and the complete compound or mixture is formed about this base. The term chemical is employed in the claims to designate an element or combination of elements present either in chemical combination with the lead or in a material not in chemical combination with the lead, the chemical being adapted to form with the lead a substantially non-fluxing compound during combustion of the fuel. It has been found that these substances form practically nonfluxing compounds when burned.

The alkyl dihalide compounds of lead and the trialkyl monohalide compounds of lead are generally less soluble in kerosene and gasoline than the tetra alkyl compounds. Benzol and an alcohol miscible in all proportions with paraffin hydrocarbons, or mixtures thereof, may be employed to assist in blending these anti-knock compounds with the fuel. The percentage of these blending agents employed with the small amount of anti-knock compound to be added to the fuel, is generally not over 1% of the total gasoline for the trialkyl monohalide compounds and not over 5% of the total gasoline for the dialkyl dihalide compounds. These proportions of the blending agents may be used for the corresponding phenyl compounds.

I claim:

comprising a low compression motor fuel; nature.
and an alkyl compound of lead.

20. A fuel for internal combustion engines

THOMAS MIDGLEY, Jr.

Certificate of Correction.

It is hereby certified that in Letters Patent No. 1,573,846, granted February 23, 1926, upon the application of Thomas Midgley, Jr., of Dayton, Ohio, for an improvement in "Methods and Means for Using Motor Fuels," an error appears in the printed specification requiring correction as follows: Page 1, line 62, for the word "proper" read *poorer;* and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 22d day of June, A. D. 1926.

[SEAL.]

M. J. MOORE,
Acting Commissioner of Patents.

GENERAL MOTORS CORPORATION, OF DETROIT, MICHIGAN, A CORPORATION OF DELAWARE.

FUEL.

No Drawing. Application filed May 19, 1923. Serial No. 640,274.

This invention relates to the use of lead alkyl and aryl compounds in hydrocarbon motor fuels such, for example, as kerosene and gasoline, to increase the critical compression pressure of the fuel and avoid a fuel knock in an internal-combustion engine operating at compressions above the normal critical compression pressure of the fuel. The principal object of the invention is to form with the fuel and a hydrocarbon compound of lead, a combination which burns in the engine and yields a lead compound having a relatively low fluxing action as contrasted particularly with lead oxide. Fuel knock is a function of the fuel employed and the compression pressure used as contrasted with a mechanical knock, and the term "antiknock substance" as employed herein designates a compound which, when present in the combustion chamber in relatively small quantities at the time of combustion, inhibits the fuel knock.

This combination may be effected by employing with a tetra ethyl, tetra phenyl, tetra methyl, tetra amyl, or other similar compound of lead in the fuel, a chlorine compound such, for example, as carbon tetra chloride or an alkyl chloride such as amyl chloride, hexyl chloride or ethyl chloride, which supplies chlorine which combines with the lead during combustion to form a lead-chloride compound. The corresponding iodide and bromide compounds may be employed in place of the chloride compounds. A preferred method of carrying out my invention in forming this class of combination is to use a mixture (by weight) of 2 parts of carbon tetra chloride and 3 parts of lead tetra ethyl or lead tetra methyl, etc. This mixture is added to the fuel in the storage tank of a filling station or the fuel tank of a car and fed with the fuel into the combustion chamber of an engine and burned therein. One of the products of combustion is a lead halide such as, in the specific example given above, lead chloride.

Another method of carrying out my invention is to form a lead alkyl or aryl chemical combination with the substance which unites with the lead during combustion to form a lead compound other than lead oxide. Examples of such compounds are lead diphenyl dibromide, lead diphenyl diiodide, lead diphenyl dichloride, and the corresponding ethyl, methyl, and other alkyl and aryl compounds with lead and a halogen; lead triethyl chloride, lead triethyl bromide and the corresponding alkyl and aryl compounds with lead and a halogen such as chlorine, iodine, or bromine.

Methods of manufacturing lead compounds are described on page 133 et. seq., Vol. III of Watts' Dictionary of Chemistry as revised by Morley and Muir and published by Longmans, Green and Co., London, England.

In these fuels, the lead and the hydrocarbon combined therewith, form the base of the anti-knock substance which suppresses a fuel knock in a mixture formed in part by a low compression fuel such as gasoline or kerosene and the complete compound or mixture is formed about this base. The term chemical is employed in the claims to designate an element or combination of elements present either in chemical combination with the lead or in a material not in chemical combination with the lead, the chemical being adapted to form with the lead a substantially non-fluxing compound during combustion of the fuel. It has been found that these substances form practically nonfluxing compounds when burned.

The alkyl dihalide compounds of lead and the trialkyl monohalide compounds of lead are generally less soluble in kerosene and gasoline than the tetra alkyl compounds. Benzol and an alcohol miscible in all proportions with paraffin hydrocarbons, or mixtures thereof, may be employed to assist in blending these anti-knock compounds with the fuel. The percentage of these blending agents employed with the small amount of anti-knock compound to be added to the fuel, is generally not over 1% of the total gasoline for the trialkyl monohalide compounds and not over 5% of the total gasoline for the dialkyl dihalide compounds. These proportions of the blending agents may be used for the corresponding phenyl compounds.

I claim:

1. A homogeneous composition of matter comprising a motor fuel, and an anti-knock substance for said motor fuel having a lead content and a chemical adapted to combine with the lead during combustion of the fuel to form a lead compound having a lower fluxing action than lead oxide.

2. A homogeneous composition of matter

comprising a motor fuel, and an anti-knock substance for said motor fuel having as a base a hydrocarbon compound of lead and a chemical adapted to combine with the lead during combustion of the fuel to form a relatively nonfluxing lead compound.

3. A homogeneous composition of matter comprising gasoline, and an anti-knock substance for said motor fuel formed on a lead alkyl base and having a chemical adapted to combine with the lead during burning in an engine to form a lead compound having a lower fluxing action than lead oxide.

4. A composition of matter comprising a motor fuel; and an anti-knock substance for said motor fuel having as a base a lead compound and containing a halogen.

5. A composition of matter comprising a hydrocarbon fuel, a hydrocarbon compound of lead, and a halide.

6. A composition of matter comprising a hydrocarbon fuel, an alkyl compound of lead, and a halide.

7. A composition of matter comprising gasoline, an alkyl compound of lead, and a chloride.

8. A composition of matter comprising gasoline, lead tetra ethyl, and carbon tetra chloride.

9. A composition of matter comprising a lead alkyl compound, and a halide.

10. A composition of matter comprising a lead alkyl compound, and a chloride.

11. A composition of matter comprising a lead alkyl compound, and carbon tetra chloride.

12. A composition of matter comprising lead tetra ethyl, and carbon tetra chloride.

In testimony whereof I hereto affix my signature.

THOMAS MIDGLEY, Jr.

Patented May 1, 1928. 1,668,022

UNITED STATES PATENT OFFICE.

THOMAS MIDGLEY, JR., OF DAYTON, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO GENERAL MOTORS CORPORATION, OF DETROIT, MICHIGAN, A CORPORATION OF DELAWARE.

MOTOR FUEL.

No Drawing. Application filed January 6, 1925. Serial No. 916.

This invention relates to a motor fuel, and to the burning of fuel mixtures in an internal combustion engine in the presence of substances added to a fuel or fuel mixture, including a compound of a metal, and, more particularly, a compound such as lead tetra ethyl, which decreases fuel knock. The present application is a continuation in part of my Patent No. 1,592,954 issued July 20, 1926, disclosing the use of halide compounds with a motor fuel, and lead tetra ethyl.

The object of the present invention is to prevent the formation of a deposit on engine parts and especially valve stems, resulting from the use of such compounds with the fuel in the combustion chamber of a motor.

By way of an example, I may form a knock suppressing composition by mixing, by volume, 40 parts of lead tetra ethyl, 13 parts of ethylene dibromide, 7 parts of monochlorinated naphthalene, and 5 parts of propylene dibromide. 4 cc. of this composition is added to a gallon of kerosene or gasoline, a fuel-air mixture is formed and the mixture is burned in an internal combustion engine. The composition vaporizes in the engine cylinder, and the gasoline or kerosene is burned in the presence of these vapors. One of the products of combustion is lead bromide. The ethylene dibromide and propylene dibromide are the source for the bromine which combines with the lead and so reduces the formation of lead oxide which fluxes more readily with engine parts such as spark plug points. Either the chlorinated naphthalene or the bromide compound may be omitted but the use of both is preferred.

Kerosene and gasoline are named merely as common examples of low compression fuels which give a fuel knock when a gaseous mixture containing the fuel is burned under relatively high compression. The composition given reduces the fuel knock.

The composition may be varied by changing the proportions of the ingredients given in the example, or substituting other halide compounds for the halide compounds given. Apparently these compounds give lubrication and protection to valve stems.

A mixture of ethylene dibromide and propylene dibromide is preferred in cold weather because of its low freezing point. I may use in the fuel either of these or ethylene chlorobromide, butylene chlorobromide, amylene chlorobromide, tribromaniline, ethyl bromide, or other bromide compounds. While the bromide compounds are now preferred to the chlorine compounds, I may use ethylene dichloride, propyline dichloride, or butylene dichloride, trichloraniline or other chloride compounds. The quantity of each of these used depends on the amount of their halide content. Since the bromide compounds are, generally, more effective than the chloride compounds, the quantity of bromides used may be smaller than the chlorides.

The lubricant, such as a halogenated aromatic compound, has been found effective with compounds of other metals, such, for example, as arsenic, tin, nickel, iron, zinc, and many others. The hydrocarbon compounds of the metals such as the alkyl compounds, and the carbonyl compounds such as nickel carbonyl and iron carbonyl are preferred. Other metal compounds are titanium tetrachloride, and tin tetra-chloride.

For commercial purposes a composition which is a single phase or homogenous liquid and oil soluble is preferred. When substances such as tribromaniline and tribromphenol are used, separate phases of the composition result but are all soluble in the gasoline. In such a case I may employ multi-stage mixing with the gasoline or other fuel. If desired, blending agents, such as benzol, may be used.

I have found that motor compounds which become volatile under engine conditions are best adapted to reduce fuel knock.

What I claim is:

1. A motor fuel comprising a hydrocar-

relatively nonfluxing lead compound.

3. A homogeneous composition of matter comprising gasoline, and an anti-knock substance for said motor fuel formed on a lead alkyl base and having a chemical adapted to combine with the lead during burning in an engine to form a lead compound having a lower fluxing action than lead oxide.

4. A composition of matter comprising a motor fuel; and an anti-knock substance for said motor fuel having as a base a lead compound and containing a halogen.

5. A composition of matter comprising a hydrocarbon fuel, a hydrocarbon compound of lead, and a halide.

6. A composition of matter comprising a

8. A composition of matter comprising gasoline, lead tetra ethyl, and carbon tetra chloride.

9. A composition of matter comprising a lead alkyl compound, and a halide.

10. A composition of matter comprising a lead alkyl compound, and a chloride.

11. A composition of matter comprising a lead alkyl compound, and carbon tetra chloride.

12. A composition of matter comprising lead tetra ethyl, and carbon tetra chloride.

In testimony whereof I hereto affix my signature.

THOMAS MIDGLEY, JR.

THOMAS MIDGLEY, JR., OF DAYTON, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO GENERAL MOTORS CORPORATION, OF DETROIT, MICHIGAN, A CORPORATION OF DELAWARE.

MOTOR FUEL.

No Drawing. Application filed January 6, 1925. Serial No. 916.

This invention relates to a motor fuel, and to the burning of fuel mixtures in an internal combustion engine in the presence of substances added to a fuel or fuel mixture, including a compound of a metal, and, more particularly, a compound such as lead tetra ethyl, which decreases fuel knock. The present application is a continuation in part of my Patent No. 1,592,954 issued July 20, 1926, disclosing the use of halide compounds with a motor fuel, and lead tetra ethyl.

The object of the present invention is to prevent the formation of a deposit on engine parts and especially valve stems, resulting from the use of such compounds with the fuel in the combustion chamber of a motor.

By way of an example, I may form a knock suppressing composition by mixing, by volume, 40 parts of lead tetra ethyl, 13 parts of ethylene dibromide, 7 parts of mono-chlorinated naphthalene, and 5 parts of propylene dibromide. 4 cc. of this composition is added to a gallon of kerosene or gasoline, a fuel-air mixture is formed and the mixture is burned in an internal combustion engine. The composition vaporizes in the engine cylinder, and the gasoline or kerosene is burned in the presence of these vapors. One of the products of combustion is lead bromide. The ethylene dibromide and propylene dibromide are the source for the bromine which combines with the lead and so reduces the formation of lead oxide which fluxes more readily with engine parts such as spark plug points. Either the chlorinated naphthalene or the bromide compound may be omitted but the use of both is preferred.

Kerosene and gasoline are named merely as common examples of low compression fuels which give a fuel knock when a gaseous mixture containing the fuel is burned under relatively high compression. The composition given reduces the fuel knock.

The composition may be varied by changing the proportions and by using other chemical compounds. Other halogenated aromatic compounds such as brominated or chlorinated benzol, or brominated or chlorinated toluene or oils having similar physical characteristics including stability at relatively high temperatures may be used in place of mono-chlorinated naphthalene. Apparently these compounds give lubrication and protection to valve stems.

A mixture of ethylene dibromide and propylene dibromide is preferred in cold weather because of its low freezing point. I may use in the fuel either of these or ethylene chlorobromide, butylene chlorobromide, amylene chlorobromide, tribromaniline, ethyl bromide, or other bromide compounds. While the bromide compounds are now preferred to the chlorine compounds, I may use ethylene dichloride, propyline dichloride, or butylene dichloride, trichloraniline or other chloride compounds. The quantity of each of these used depends on the amount of their halide content. Since the bromide compounds are, generally, more effective than the chloride compounds, the quantity of bromides used may be smaller than the chlorides.

The lubricant, such as a halogenated aromatic compound, has been found effective with compounds of other metals, such, for example, as arsenic, tin, nickel, iron, zinc, and many others. The hydrocarbon compounds of the metals such as the alkyl compounds, and the carbonyl compounds such as nickel carbonyl and iron carbonyl are preferred. Other metal compounds are titanium tetrachloride, and tin tetra-chloride.

For commercial purposes a composition which is a single phase or homogenous liquid and oil soluble is preferred. When substances such as tribromaniline and tribromphenol are used, separate phases of the composition result but are all soluble in the gasoline. In such a case I may employ multi-stage mixing with the gasoline or other fuel. If desired, blending agents, such as benzol, may be used.

I have found that motor compounds which become volatile under engine conditions are best adapted to reduce fuel knock.

What I claim is:

1. A motor fuel comprising a hydrocarbon, a volatile compound of a metal, and a halogenated lubricating oil.

2. A motor fuel comprising a hydrocarbon, a volatile compound of a metal, a halogenated lubricating oil and a substance adapted to form on combustion, a non-fluxing compound with said metal.

3. A motor fuel comprising a hydrocar-

bon, a volatile compound of a metal and a halogenated oil.

4. A motor fuel comprising a hydrocarbon, a volatile compound of a metal and a chlorinated oil.

5. A motor fuel comprising a hydrocarbon, a volatile compound of a metal, and a lubricant.

6. A motor fuel comprising a hydrocarbon, a volatile compound of lead and a halogenated lubricating oil.

7. A motor fuel comprising a hydrocarbon, a volatile compound of lead and a halogenated oil.

8. A motor fuel comprising a hydrocarbon, a volatile compound of lead, and a chlorinated oil.

9. A motor fuel comprising a hydrocarbon, a volatile lead compound and a volatile bromide compound.

10. A motor fuel comprising a hydrocarbon, a hydrocarbon compound of lead, and a volatile bromide compound.

11. A motor fuel comprising a hydrocarbon, a lead alkyl compound, and a volatile bromide compound.

12. A motor fuel comprising a hydrocarbon, lead tetraethyl, and ethylene dibromide.

13. A motor fuel comprising a hydrocarbon, a volatile lead compound, a volatile halide compound, and a lubricant.

14. A motor fuel comprising a hydrocarbon, a volatile lead compound, a volatile bromide compound, and a lubricant.

15. A motor fuel comprising a hydrocarbon, a lead alkyl compound, a volatile bromide compound and a halogenated oil.

16. A motor fuel comprising a hydrocarbon, lead tetra ethyl, ethylene dibromide, and mono-chlorinated naphthalene.

17. A composition of matter comprising a volatile compound of a metal, and a halogenated lubricating oil.

18. A composition of matter comprising a volatile metal compound and a halogenated oil.

19. A composition of matter comprising a volatile lead compound and a halogenated aromatic compound.

20. A composition of matter comprising a lead alkyl compound and a chlorinated oil.

21. A composition of matter comprising a volatile lead compound and a volatile bromide compound.

22. A composition of matter comprising a lead alkyl compound and a volatile bromide compound.

23. A composition of matter comprising lead tetra ethyl and a volatile bromide compound.

24. A composition of matter comprising a lead alkyl compound, a volatile bromide compound and a halogenated oil.

25. A composition of matter comprising lead tetra ethyl, ethylene dibromide, and mono-chlorinated naphthalene.

THOMAS MIDGLEY, JR.

83 EXHIBIT 3-D

Patented Dec. 30, 1930 1,787,419

UNITED STATES PATENT OFFICE

THOMAS MIDGLEY, JR., OF DAYTON, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO GENERAL MOTORS CORPORATION, OF DETROIT, MICHIGAN, A CORPORATION OF DELAWARE

METHOD FOR USING MOTOR FUELS

No Drawing. Original application filed April 15, 1922, Serial No. 553,270. Patent No. 1,573,846, dated February 23, 1926. Divided and this application filed January 22, 1926. Serial No. 83,133.

This invention relates to fuels, such, for example, as kerosene and gasoline, employed in the operation of internal-combustion engines and to the art of burning the fuels in an engine. The present tendency is to produce lower grades of gasoline in order to obtain a sufficient output for the increasing demand for motor fuels and to reduce the compressions of the engines so that these lower grades of fuel may be used without knocking. As the lowering of engine compression reduces the efficiency of the engine, a still greater output of fuel is required to meet the increase in fuel required to operate larger and less efficient engines. The principal objects of the present invention are to overcome these difficulties and to provide a means for using either low or high grades of motor fuel more efficiently and so reduce the quantity of fuel used.

The present application is a division of my co-pending application Serial No. 553,270, filed April 15, 1922; now Patent No. 1,573,846, Feb. 23, 1926.

Kerosene, gasoline and the heavier hydrocarbons have the characteristic that, when a combustible gaseous mixture containing one of these fuels and air is burned in an internal combustion engine while subjected to a relatively high pressure, a fuel knock is produced, the engine heats rapidly, the efficiency of the engine is reduced, and, if the initial pressure is very high, engine parts may be injured. The highest pressure at which a mixture may be burned in a cylinder without producing a fuel knock varies with the different fuels and, to some extent, with the temperature, position of spark plugs and other conditions within the engine. This pressure I term the "critical compression pressure" of the fuel.

The average critical compression pressure of kerosene is about 50 pounds, of the poorer grades of gasoline about 75 pounds and of the 75 pounds are used generally, and internal-combustion engines for house lighting systems, trucks, tractors, and automobiles are designed to operate on these kinds of fuel.

I have found that the critical compression pressure of a fuel of the type mentioned above is increased by incorporating therewith any one of a large number of compounds containing metallic elements i. e., compounded metallic elements.

By way of example, I may use a fuel consisting by volume of ¼ of one percent of tetra ethyl lead and 99¾ per cent of gasoline having a normal "critical compression pressure" of about 75 pounds. The tetra ethyl lead dissolves in the gasoline forming a fuel having a "critical compression pressure" of about 160 pounds. The presence of the lead compound changes the gasoline from a low compression fuel to a higher compression fuel i. e. increases its "critical compression pressure". This gasoline may be used in an engine having a compression pressure of about 160 pounds with a smaller fuel consumption for obtaining a given amount of work than is required to operate an engine having a compression pressure of 75 pounds on the untreated gasoline. Experiments with automobiles have shown that if the engine compression is increased to 160 pounds, a treated fuel being used to run the engine and the gear ratio between the engine and the rear axle is reduced, the mileage obtained from a gallon of gasoline is substantially twice that obtained when running the engine at 75 pounds compression on the untreated or low compression fuel.

For some commercial purposes it will probably be sufficient to use but one part of tetra ethyl lead in 2000 parts of gasoline. This mixture may be used in a truck motor to avoid the knock generally produced when climbing hills at low speed with open throt-

bon, a volatile compound of a metal, and a lubricant.

6. A motor fuel comprising a hydrocarbon, a volatile compound of lead and a halogenated lubricating oil.

7. A motor fuel comprising a hydrocarbon, a volatile compound of lead and a halogenated oil.

8. A motor fuel comprising a hydrocarbon, a volatile compound of lead, and a chlorinated oil.

9. A motor fuel comprising a hydrocarbon, a volatile lead compound and a volatile bromide compound.

10. A motor fuel comprising a hydrocarbon, a hydrocarbon compound of lead, and a volatile bromide compound.

11. A motor fuel comprising a hydrocarbon, a lead alkyl compound, and a volatile bromide compound.

12. A motor fuel comprising a hydrocarbon, lead tetraethyl, and ethylene dibromide.

13. A motor fuel comprising a hydrocarbon, a volatile lead compound, a volatile halide compound, and a lubricant.

14. A motor fuel comprising a hydrocarbon, a volatile lead compound, a volatile bromide compound, and a lubricant.

17. A composition of matter comprising a volatile compound of a metal, and a halogenated lubricating oil.

18. A composition of matter comprising a volatile metal compound and a halogenated oil.

19. A composition of matter comprising a volatile lead compound and a halogenated aromatic compound.

20. A composition of matter comprising a lead alkyl compound and a chlorinated oil.

21. A composition of matter comprising a volatile lead compound and a volatile bromide compound.

22. A composition of matter comprising a lead alkyl compound and a volatile bromide compound.

23. A composition of matter comprising lead tetra ethyl and a volatile bromide compound.

24. A composition of matter comprising a lead alkyl compound, a volatile bromide compound and a halogenated oil.

25. A composition of matter comprising lead tetra ethyl, ethylene dibromide, and mono-chlorinated naphthalene.

THOMAS MIDGLEY, JR.

UNITED STATES PATENT OFFICE

THOMAS MIDGLEY, JR., OF DAYTON, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO GENERAL MOTORS CORPORATION, OF DETROIT, MICHIGAN, A CORPORATION OF DELAWARE

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The present application is a division of my co-pending application Serial No. 553,270, filed April 15, 1922; now Patent No. 1,573,846, Feb. 23, 1926.

Kerosene, gasoline and the heavier hydrocarbons have the characteristic that, when a combustible gaseous mixture containing one of these fuels and air is burned in an internal combustion engine while subjected to a relatively high pressure, a fuel knock is produced, the engine heats rapidly, the efficiency of the engine is reduced, and, if the initial pressure is very high, engine parts may be injured. The highest pressure at which a mixture may be burned in a cylinder without producing a fuel knock varies with the different fuels and, to some extent, with the temperature, position of spark plugs and other conditions within the engine. This pressure I term the "critical compression pressure" of the fuel.

The average critical compression pressure of kerosene is about 50 pounds, of the poorer grades of gasoline about 75 pounds and of the better grades of gasoline about 125 pounds. The latter grade of gasoline is produced in limited quantities and is not available universally to the consumer. The commoner grades of fuel, such as kerosene and gasoline, having critical compression pressures below 75 pounds are used generally, and internal-combustion engines for house lighting systems, trucks, tractors, and automobiles are designed to operate on these kinds of fuel.

I have found that the critical compression pressure of a fuel of the type mentioned above is increased by incorporating therewith any one of a large number of compounds containing metallic elements i. e., compounded metallic elements.

By way of example, I may use a fuel consisting by volume of ¼ of one percent of tetra ethyl lead and 99¾ per cent of gasoline having a normal "critical compression pressure" of about 75 pounds. The tetra ethyl lead dissolves in the gasoline forming a fuel having a "critical compression pressure" of about 160 pounds. The presence of the lead compound changes the gasoline from a low compression fuel to a higher compression fuel i. e. increases its "critical compression pressure". This gasoline may be used in an engine having a compression pressure of about 160 pounds with a smaller fuel consumption for obtaining a given amount of work than is required to operate an engine having a compression pressure of 75 pounds on the untreated gasoline. Experiments with automobiles have shown that if the engine compression is increased to 160 pounds, a treated fuel being used to run the engine and the gear ratio between the engine and the rear axle is reduced, the mileage obtained from a gallon of gasoline is substantially twice that obtained when running the engine at 75 pounds compression on the untreated or low compression fuel.

For some commercial purposes it will probably be sufficient to use but one part of tetra ethyl lead in 2000 parts of gasoline. This mixture may be used in a truck motor to avoid the knock generally produced when climbing hills at low speed with open throttle. Relatively small proportional quantities of the lead compound are required to increase the critical compression pressure of "aviation" gasoline from 125 pounds to 160 pounds or more.

The fuel mixture or combination may also be varied by using other fuels as the fuel base

or major constituent of the high compression fuel and using other compounded metallic elements to increase critical compression pressure. The fuels used include gasoline and other hydrocarbon fuels containing hydrocarbons which may be obtained from an asphalt, naphthene, paraffine base crude or mixtures thereof.

Other lead compounds which have been used successfully are the phenyl compounds and other alkyl compounds besides tetra ethyl lead. These include the ethyl, isopropyl and method compounds. Methods of manufacturing lead compounds are described on page 134 et. seq., Vol. 111 of Watts' Dictionary of Chemistry as revised by Morley and Muir and published by Longmans, Green and Co., London, England.

Other metallic compounds may be used to suppress a knock in a motor. These include compounds of selenium, tellurium, tin, arsenic and antimony. The phenyl and alkyl compounds of these metals have been successfully used where the stable compounds are obtainable. The alkyl metal compounds usually have a greater knock suppressing value than the corresponding phenyl compounds.

Dissolving a knock suppressing substance in a hydrocarbon fuel has been found the most satisfactory method of changing the critical compression pressure of the fuel, and for this reason the organic compounds have been employed to a greater extent than other compounds in suppressing knocks, however, I do not limit my invention to organic compounds nor to the oil soluble compounds.

The value of metallic compounds in changing the critical compression pressure depends upon the metal used, the composition of the compounds, its stability and volatility. Up to the point of complete vaporization the anti-knock value depends in part on the percentage of the compound vaporized under engine conditions. Where the nature of the compound changes before ignition of the fuel, combustion of the fuel takes place in the presence of the new compound and the anti-knock value depends on the nature of the new compound instead of the compound added to the fuel.

If a radical is attached to the metal in the compound in such a manner that the resulting compound is oil soluble and volatile, a high anti-knock value for that metal is obtained. As the compound departs from these conditions either in the kind of radical employed or the number of [illegible] volatile and less soluble in the fuel than the tetra ethyl lead. The tri-ethyl lead hydroxide is almost as powerful a knock suppresser as the tetra ethyl lead.

The value of a compounded metallic element as a knock suppresser appears also to be a period function of the atomic number and, in general, with similar elements increases with increasing atomic weight. To illustrate this function, I take the ethyl compounds of the metals in the right hand column of the 4th, 5th, and 6th groups, wherever stable ethyl compounds are obtainable. As the ethyl compound of antimony is unstable in the air at room temperature, I employ the phenyl compound of antimony. These compounds increase in knock suppressing value in group 4 in the order tin, lead; in group 5 in the order arsenic, antimony; and in group 6 in the order selenium, tellurium. Taking group 4 as an example, 1% by volume of the ethyl compounds of the metals in gasoline or kerosene give the following increases in critical compression pressure: tin, 15 pounds; lead at the rate of 340 pounds when employed in relatively small quantities.

While I have mentioned more particularly the use of phenyl and alkyl compounds of certain metals for increasing the critical compression pressure of kerosene and gasoline, my invention is not limited wholly to the use of these compounds, nor to compounds of these metals, and the compounded metallic elements may be employed with the heavier hydrocarbon or other fuels.

Further, while the specific examples herein given constitute preferred forms of embodiment of the invention, it is to be understood that other forms might be adopted, without departing from the scope of the claims which follow.

I claim:

1. A method of utilizing a low compression motor fuel which comprises forming a combustible mixture of the fuel and air, and burning the mixture under a relatively high compression in the presence of vapors of a compounded metallic element.

2. A method as defined in claim 1, in which the gaseous low compression fuel is burned in the presence of a vaporized alkyl compound of a metal.

3. A method as defined in claim 1, in which the gaseous low compression fuel is burned in the presence of a gaseous ethyl compound of a metal.

other hydrocarbon fuels containing hydrocarbons which may be obtained from an asphalt, naphthene, paraffine base crude or mixtures thereof.

Other lead compounds which have been used successfully are the phenyl compounds and other alkyl compounds besides tetra ethyl lead. These include the ethyl, isopropyl and method compounds. Methods of manufacturing lead compounds are described on page 134 et. seq., Vol. 111 of Watts' Dictionary of Chemistry as revised by Morley and Muir and published by Longmans, Green and Co., London, England.

Other metallic compounds may be used to suppress a knock in a motor. These include compounds of selenium, tellurium, tin, arsenic and antimony. The phenyl and alkyl compounds of these metals have been successfully used where the stable compounds are obtainable. The alkyl metal compounds usually have a greater knock suppressing value than the corresponding phenyl compounds.

Dissolving a knock suppressing substance in a hydrocarbon fuel has been found the most satisfactory method of changing the critical compression pressure of the fuel, and for this reason the organic compounds have been employed to a greater extent than other compounds in suppressing knocks, however, I do not limit my invention to organic compounds nor to the oil soluble compounds.

The value of metallic compounds in changing the critical compression pressure depends upon the metal used, the composition of the compounds, its stability and volatility. Up to the point of complete vaporization the anti-knock value depends in part on the percentage of the compound vaporized under engine conditions. Where the nature of the compound changes before ignition of the fuel, combustion of the fuel takes place in the presence of the new compound and the anti-knock value depends on the nature of the new compound instead of the compound added to the fuel.

If a radical is attached to the metal in the compound in such a manner that the resulting compound is oil soluble and volatile, a high anti-knock value for that metal is obtained. As the compound departs from these conditions either in the kind of radical employed or the number of radicals of a certain kind in the compound, the anti-knock value will generally be reduced. Examples of compounds in which the anti-knock value, as based on these conditions, becomes negligible are lead oleate and lead acetate. If, in the formula for tetra-ethyl lead, an OH radical is substituted for an ethyl radical, the resulting compound (tri-ethyl lead hydroxide) is less

The value of a compounded metallic element as a knock suppresser appears also to be a period function of the atomic number and, in general, with similar elements increases with increasing atomic weight. To illustrate this function, I take the ethyl compounds of the metals in the right hand column of the 4th, 5th, and 6th groups, wherever stable ethyl compounds are obtainable. As the ethyl compound of antimony is unstable in the air at room temperature, I employ the phenyl compound of antimony. These compounds increase in knock suppressing value in group 4 in the order tin, lead; in group 5 in the order arsenic, antimony; and in group 6 in the order selenium, tellurium. Taking group 4 as an example, 1% by volume of the ethyl compounds of the metals in gasoline or kerosene give the following increases in critical compression pressure: tin, 15 pounds; lead at the rate of 340 pounds when employed in relatively small quantities.

While I have mentioned more particularly the use of phenyl and alkyl compounds of certain metals for increasing the critical compression pressure of kerosene and gasoline, my invention is not limited wholly to the use of these compounds, nor to compounds of these metals, and the compounded metallic elements may be employed with the heavier hydrocarbon or other fuels.

Further, while the specific examples herein given constitute preferred forms of embodiment of the invention, it is to be understood that other forms might be adopted, without departing from the scope of the claims which follow.

I claim:

1. A method of utilizing a low compression motor fuel which comprises forming a combustible mixture of the fuel and air, and burning the mixture under a relatively high compression in the presence of vapors of a compounded metallic element.

2. A method as defined in claim 1, in which the gaseous low compression fuel is burned in the presence of a vaporized alkyl compound of a metal.

3. A method as defined in claim 1, in which the gaseous low compression fuel is burned in the presence of a gaseous ethyl compound of a metal.

In testimony whereof I hereto affix my signature.

THOMAS MIDGLEY, Jr.

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EXHIBIT 64

REGULATIONS

For Handling and Mixing

ETHYL FLUID

By Means of Tank Equipment

and

For Related Activities

(To apply without alteration to the handling of "Q" Fluid by tank equipment)

Issued by

MEDICAL DEPARTMENT

ETHYL GASOLINE CORPORATION

DR. ROBERT A. KEHOE, Director

DATE, FEBRUARY 18, 1938

Note: These Rules and Regulations supersede all Rules and Regulations previously issued, and should be carefully studied and followed.

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REGULATIONS

For Handling and Mixing

ETHYL FLUID

By Means of Tank Equipment
and
For Certain Other Related Activities
(To apply without alteration to "Q" Fluid)

I. REGULATIONS OF DIRECT CONCERN TO RESPONSIBLE OFFICIALS OF DISTRIBUTING COMPANIES

The attention of the management of plants in which ETHYL Fluid is mixed with gasoline is directed to certain matters for which the management is responsible, and which are of fundamental importance in safeguarding the handling of the Fluid.

A. The Selection of the Personnel.

1. Intelligent young men who can understand the instructions given to them, and who can be depended upon to carry them out with precision, should be selected to do the mixing and to carry out all other operations on tank-cars, tank-trucks, or mixing equipment.

2. As few men should be used as are needed to do the work and all must be instructed regarding the dangers of carelessness when handling ETHYL Fluid. All handling of ETHYL Fluid before it is mixed into gasoline is to be done by this same group of men.

3. The men selected shall be used only *after* and as long as they are approved as to physical fitness by a medical representative of Ethyl Gasoline Corporation.

B. The Utilization of Adequate Mixing Equipment.

1. Each mixing system must be built in precise accordance with a blue print submitted by the distributing company and approved by Ethyl Gasoline Corporation. Such a blue print is based upon a representative drawing and upon specifications furnished by Ethyl Gasoline Corporation. The specifications must cover not less than the following requirements, as purely hygienic considerations.

(a) A fire-proof building with space sufficient for the installation of an ETHYL Fluid storage tank, for the operation of all mixing equipment, and for housing adequate washroom facilities, must be constructed at a point not too intimately associated with other buildings.

(b) The building must have a concrete floor with a concrete pit for the ETHYL Fluid storage tank sufficient in capacity to hold the contents of the tank in case of leak, and it must be supplied with adequate drains connected with a sewer. It must also be supplied adequately with water lines and suitable hose and with a convenient supply of kerosene for washing down. The entrances must be fitted with adequate locks.

(c) There must be a wash room and locker room for the use of the workmen, supplied with a shower bath and wash basin with hot and cold running water, and with space sufficient for two lockers for each workman, one for clean and one for used clothing. A supply of kerosene shall be available in the wash room. Toilet facilities are advisable at all mixing plants, and mandatory when the time required for mixing extends over a period of hours.

2. In addition to two lockers, each person who works in the mixing plant must be furnished two sets of clothing, consisting of underwear, socks, outer clothing, cap, shoes and rubber gloves. In warm weather overalls may be used as outer clothing but heavier clothing must be provided as needed. The clothing should be white, so that all stains or spots can be seen. The rubber gloves must be heavy enough to stand use without tearing. Canvas gloves with leather palms may be used over the rubber gloves to protect them. Leather shoes must not be used. The heavy acid-proof rubber and canvas boot is recommended and rubber-soled tennis shoes are satisfactory.* Rubber boots must be supplied for washing down the floor of the building.

3. Each person working in the mixing plant must be supplied with a gas mask which is equipped with a rubber face-piece, covering the entire face, eyes, nose and mouth (similar to the Tissot type) with eye-pieces of splinterless glass, rubber breathing tube, and a canister separate from the face-piece, containing not less than 500 cc. of high grade activated charcoal.

* Where general refinery rules forbid the use of shoes with soft toes, ordinary tennis shoes may not be used.

4. Soap, hand brushes, and towels must be supplied in adequat quantities for the wash room, and replacements of all equipmen must be made in accordance with the needs of the men in carryin out the instructions given them. (See Section II)

C. Maintenance of Equipment, Repair of Leaks, and Emergenc Measures.

1. The apparatus for emptying tank-cars or trucks and for stor ing ETHYL Fluid is designed so as to be a *closed* system at all time Only by keeping it entirely closed can it be operated with safet in the building in which it is installed. Accordingly the developmen of leaks or the necessity for repairs constitutes a situation that call for unusual caution and special technique.

2. All leaks or necessity for repairs should be reported immedi ately to the Ethyl Gasoline Corporation or its authorized representa tive. No repair work should be done until such representative i present or until he has given permission to proceed with the neces sary corrections.

3. Under no circumstances is the ETHYL Fluid storage tank t be opened by the mixing or the refinery maintenance personnel.

4. In the event of the escape of any ETHYL Fluid from tank car or truck, all persons are to leave the vicinity at once and not t return except as they are equipped with proper clothing and ga masks. If a break or leak should occur within a mixing plant, th building must be evacuated promptly by all persons except thos equipped with proper clothing and gas masks. All contact with Fluid and all inhalation of vapor from Fluid is to be avoided with th utmost care.

D. The Posting of Instructions and Notices at the Mixing Plant

A placard containing detailed instructions to the men who carr out mixing operations, as given in Sections II and III below, shall b posted in a conspicuous place at the mixing plant. A notice must also be posted forbidding the entrance to the mixing plant of all persons except those who have been authorized and taught to carry out mixing operations. This notice must be enforced, and the building must be kept locked except when in use.

E. The Avoidance of Irregular Practices in Mixing.

1. Safety in commercial mixing operations is based upon the use of specifically designed and authorized mixing equipment under specified regulations with which workmen must be familiar. The management must be equally familiar with the details of regulations, and should refrain from any commercial arrangements or any orders to workmen which require or imply violation of the spirit or letter of the regulations.

2. These regulations are concerned solely with the handling of Ethyl Fluid by means of storage-tank equipment. If, in an emergency, it is necessary to handle drums (barrels) of ETHYL Fluid at a mixing point equipped only with storage-tank facilities, a drum-eductor system must be installed under the supervision of a representative of Ethyl Gasoline Corporation.

3. In every detail which involves the transportation, handling, storage, emptying and washing out of drums (barrels) of Fluid, as distinguished from mixing operations involving only the withdrawal of Fluid from the weigh-tank, the *Regulations for Handling and Mixing Ethyl Fluid at Mixing Plants at Which Fluid Storage Tanks are Filled from Drums* must be put into effect.

F. The Promotion of Safety in Other Plant Activities Related to ETHYL Fluid.

The regulations contained in Sections IV and V of this booklet involve the safety of persons other than the mixing personnel and require the attention of the management. They should be studied carefully.

The Regulations contained in Sections II and III below are made into a placard and must be posted in a conspicuous place in mixing plants.

II. GENERAL REGULATIONS

ETHYL Fluid is poisonous when it gets into the body. It may get into the body through your skin, or by way of dirty hands into your mouth, or may be breathed into your lungs when the vapor is in the air you breathe. The following directions will tell you how to work with ETHYL Fluid and yet keep it out of your body.

A. Description and Care of Equipment to be Used by Men Employed in Mixing Plants.

1. Each person who works in the plant must be given two lockers, one for clean clothing, the other for used clothing, and two sets of clothing consisting of underwear, socks, outer clothing, cap, shoes, and rubber gloves. In warm weather overalls may be used as outer clothing, but heavier clothing must be provided as needed. The clothing should be white so that all stains or spots can be seen.

The rubber gloves must be heavy enough to stand use without tearing. Canvas gloves with leather palms may be used over the rubber gloves to protect them. Leather shoes must not be used. The heavy acid-proof rubber and canvas boot is recommended, and rubber soled tennis shoes are satisfactory.* Rubber boots must be worn when washing the floor.

2. Each person working in the mixing plant must be supplied with a gas mask which is equipped with a rubber face-piece covering the entire face, eyes, nose and mouth (similar to the Tissot type) with eye-pieces of splinterless glass, a rubber breathing tube, and a canister separate from the face-piece, containing not less than 500 cc of high grade activated charcoal.

3. The clothing and other equipment must be inspected after each period of use.

(a) The canister of the mask must be renewed after 100 hours of normal use, or at the end of six months, whichever is the shorter period. A record of the use of each canister must be kept. If, by reason of emergency, the mask should be used continuously for some hours in a high concentration of vapors of Fluid, within the building, the canister must be discarded.

(b) The mask must be examined thoroughly after each period of use and if contaminated it must be cleaned with kerosene, followed by soap and water. The face-piece should be washed off with soap and water after each period of use. When not in use the mask should be kept in a receptacle which will keep it clean, and the canister should be kept sealed to avoid absorption of moisture and other vapor.

* Where general refinery rules forbid the use of shoes with soft toes, ordinary tennis shoes may not be used.

(c) The outer clothing must be laundered if dirty or spotted with Fluid. If spotted with Fluid, it must first be rinsed repeatedly in kerosene, or in a non-inflammable dry-cleaning liquid, after which it should be laundered.

(d) Gloves, and boots or shoes must be cleaned with a quick-drying solvent if they show any stains of Fluid.

(e) Any rubber equipment which becomes spongy or weakened must be discarded.

4. The wash room of each mixing plant must be provided with a shower bath and wash basin furnished with hot and cold water, with a convenient receptacle containing kerosene, and with soap and towels. Toilet facilities should also be installed.

B. How to Keep Your Skin Clean.

1. Do not wear your ordinary clothing while working with ETHYL Fluid. Put your own clothing in a clean locker and dress from the skin out in clean work clothing.

2. Do not put on any clothing which has not been laundered after being in contact with ETHYL Fluid.

3. When you finish working with ETHYL Fluid take off all your clothing, hang it up in a locker provided for the purpose, and bathe carefully with soap and hot water.

4. Do not touch anything having ETHYL Fluid on it with your bare hands.

5. Do not spill or splash ETHYL Fluid.

6. If you should get the Fluid on any part of your skin stop what you are doing at once, remove your clothes, and clean the Fluid off. Wash the part with kerosene, and then wash off all the kerosene with soap and hot water.

7. If you must touch anything having ETHYL Fluid upon it, put on your rubber gloves. Be sure your rubber gloves are in perfect condition. If they have a hole in them or if they are spongy, they are more dangerous than no gloves at all.

8. If your clothes are splashed or wet with ETHYL Fluid, take them off. The Fluid will soak through and get on your skin.

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C. How to Keep Poison Out of Your Mouth.

1. Do not put your fingers into your mouth, and do not handle anything that goes into your mouth without washing your hands carefully. Wash the hands carefully before meals, and before putting tobacco or other articles into your mouth. Use plenty of soap and a brush, being sure to brush the entire surface of the hands, and under the nails. Keep your finger nails short and clean.

D. How to Keep From Breathing Fumes from ETHYL Fluid.

1. Whenever you can smell the Fluid you are breathing it in. Do not stay in any place where you can smell ETHYL Fluid. It is possible to prevent such fumes from being present where you work. See that this is done. If you can smell the Fluid there is a leak, or there has been a spill. The management must be notified, and the faulty conditions must be corrected before work is continued. If you must work for a short time in a place where the smell of the Fluid is noticed, put on a gas mask. Test it to be sure it fits properly and does not leak. This allows you to breathe pure air.

E. Care of General Health.

1. Eat regularly of a well mixed diet. Do not go to work without breakfast and do not adopt unusual diets except as prescribed by a physician for some special reason.

2. When you are sick in any way, whether from a bad cold or any other thing, do not work in the mixing plant. Report to the foremen and consult the refinery doctor. Sickness of any kind is reason enough for not working with material containing lead.

3. Your teeth should be kept clean and in good condition. Clean them twice daily, brushing them carefully. If your gums bleed when you brush your teeth, consult your dentist. Do not keep old snags and roots of teeth in your mouth. Have them pulled. They are a menace to your health.

4. Keep the bowels regular. When a cathartic is needed use Epsom Salts or Magnesium Citrate or Seidlitz Powders.

5. Drink water freely and regularly.

A. Unloading Tank-Cars of ETHYL Fluid.

1. When the full tank-car of ETHYL Fluid is placed at the unloading site, the car brakes should be set prior to connecting the swing line. The car should be adequately protected against collision or removal.

2. When the unloading line has been connected to the tank car, the entire unloading and gasoline washing operation must be completed forthwith. Men shall remain at the plant constantly and maintain careful supervision of the operation until the last gasoline wash has been evacuated and the unloading line is disconnected.

3. Under no conditions should tank-cars be sampled.

4. The "Poisonous" placards should be kept in place while the tank-car is being emptied.

5. All persons in any way concerned with the work of opening the car and making the proper connections are to be provided with the regulation clothing prescribed in the foregoing section, with rubber and canvas gloves, and with gas masks. This work shall be done only by those persons designated for the purpose and kept under medical supervision.

6. By use of the key supplied, the lock in the car dome may be removed and opened; and a careful inspection shall be made to determine whether or not any ETHYL Fluid has escaped into the dome of the car. There should be no evidence of any stain, nor should there be any odor of ETHYL Fluid. If such is present the operator should put on his gas mask at once and remove all Fluid by swabbing the area with clean kerosene on waste or cloth, disposing of the waste, (preferably by burning), as soon as the job of cleaning is completed.

7. None of the valves should be opened until the swing line has been connected.

B. Washing Out and Releasing Tank-Cars.

1. After the Fluid has been emptied into the storage tank through the vacuum system, the tank-car should be washed out with gasoline. Such washing not only removes the last of the Fluid which has been purchased, but it also should wash out the entire line from tank-car to storage tank in such a way as to free it of ETHYL Fluid. To accomplish this properly repeated washing is necessary.

Not less than 200 gallons of gasoline should be introduced into the tank-car, and the process should then be repeated by again introducing and removing not less than 1000 gallons of gasoline for a 3000 gallon car, or 2000 gallons of gasoline for a 6000 gallon car.

2. After the car has thus been thoroughly cleaned, the combination gauge should be taken off and the vent valve closed. The valve on the end of the swing line should be closed tightly, and the proper discharge valve on the tank-car should be left open for a few minutes in order that any residual liquid in the connections may properly drain. Then tightly close this latter valve, disconnect the swing line and replace the blank flange on the top of the tank-car valve. All spillage must be absolutely avoided and will be if this procedure is carried out.

An inspection should be made to make certain that all valves are closed and that all flanges are bolted in place. In the event that the car is either received or returned with any of the equipment in defective condition, immediate notification should be sent to the Ethyl Gasoline Corporation, Manufacturing Department, P. O. Box 1271, Wilmington, Delaware. Should it be found that the tank shows any leakage, wire immediately, charges collect, Ethyl Gasoline Corporation, Wilmington, Delaware.

(a) If major defects endangering the safe return of the car are discovered, immediately communicate the facts to the nearest division office or the nearest representative of Ethyl Gasoline Corporation.

(b) Minor defects that will not affect safe return may be reported to the Manufacturing Department, as above.

(c) After the car has been ascertained to be in satisfactory condition for return, the dome cover should be locked in place and the track banners removed.

(d) The placards should now be reversed to read "Dangerous Empty".

(e) Under no condition should any ETHYL Fluid tank-car be used for any other purpose than for the transportation of Motor Fuel Anti-Knock Compounds. Its use for other purposes, is prohibited by the Interstate Commerce Commission.

3. On completion of the above procedures the operators should bathe and resume their customary clothing.

C. Unloading, Washing and Releasing Tank-Trucks of ETHYL Fluid.

The provisions of Articles A and B, immediately preceding, must be applied in dealing with Fluid received in tank-trucks, but with due regard to slight variations in the equipment.

1. Care must be exercised in blocking the truck in position so as to avoid movement during unloading.

2. In washing out the tank the volume of gasoline introduced must be adapted to the capacity of the tank.

D. Mixing ETHYL Fluid with Gasoline.

1. When a mix is to be made it is not necessary that clothing be changed or that the operator bathe afterward except as some unforeseen occurrence may introduce the opportunity for exposure to ETHYL Fluid. In any case, clothing and mask shall be available to make possible the avoidance of exposure in any emergency. Care must be exercised to detect any possibility of exposure to Fluid through skin contact or inhalation of vapors.

2. If a situation should arise which makes necessary the use of protective clothing and masks, the operator should carry out all the provisions of the General Regulations as to clothing, bathing, and care of equipment.

3. Any dye needed to bring up the color to standard shall be prepared outside the mixing and storage building, and shall be handled in such a manner as not to stain the floor, or the clothing of the operators, to the end that dye stains on equipment and clothing of operators may be *known* to be due to ETHYL Fluid. Dye or inhibitor mixtures should not pass through the lines within the mixing plant.

E. Maintenance of Equipment, Repair of Leaks, and Emergency Measures.

1. The apparatus for emptying tank-cars or trucks and for storing ETHYL Fluid is designed so as to be a *closed* system at all times. Only by keeping it entirely closed can it be operated with safety in the building in which it is installed. Accordingly the development of leaks, or the necessity for repairs constitutes a situation that calls for unusual caution and special technique.

2. All leaks or necessity for repairs should be reported immediately to the Ethyl Gasoline Corporation or its authorized representative. No repair work should be done until such representative is present or until he has given permission to proceed with the necessary corrections.

3. Under no circumstances is the ETHYL Fluid storage tank to be opened by the mixing or refinery maintenance personnel.

4. In the event of the escape of any ETHYL Fluid from tank car or truck, all persons are to leave the vicinity at once and not to return except as they are equipped with proper clothing and gas masks. If a break or leak should occur within a mixing plant, the building must be evacuated promptly by all persons except those equipped with proper clothing and gas masks. All contact with Fluid and all inhalation of vapor from Fluid is to be avoided with the utmost care.

5. Any spill or dripping of ETHYL Fluid or Fluid diluted with gasoline, within the mixing and storage enclosure, is to be cleaned up by generously flushing the area with kerosene and then with large quantities of water.

6. Pipe lines and other apparatus which are discarded as a result of repairs or changes should be burned to a red heat on a distant isolated spot, or buried.

7. Tools contaminated with ETHYL Fluid should be washed off with kerosene in sufficient excess to remove all Fluid.

The Regulations contained in Section IV below are to be regarded as the minimal requirements for safe laboratory practice in relation to ETHYL Fluid. They should be issued to the laboratory staff wherever Fluid is handled, with the exception of those to whom detailed instructions have been issued by the responsible authorities of the distributing company.

IV. REGULATIONS FOR HANDLING ETHYL FLUID IN EXPERIMENTAL AND TESTING LABORATORIES.

A. ETHYL Fluid and concentrated mixtures of ETHYL Fluid in gasoline or benzol, regardless of the amounts involved, must be handled by laboratory workers with precautions against skin contact and inhalation equivalent to those required of men engaged in mixing operations. Only chemists or persons with sound laboratory training should be permitted to handle the Fluid.

B. All persons whose work in laboratories involves chance contacts with ETHYL Fluid or concentrated solutions of Fluid, as janitors, wash-boys, and other assistants, must be given specific instructions for the avoidance of contact or exposure.

C. The Fluid or concentrated solutions of it, should never be handled in large quantities in a laboratory.

D. Provision must be made for the storage of such Fluid as is required for laboratory purposes in tightly closed containers in a naturally ventilated, locked enclosure where it is accessible only to those who have been made responsible for its disposition.

E. Skin contact must be avoided by careful handling of the Fluid and by using impervious gloves if an article wet with Fluid must be touched.

F. Inhalation of vapor should be avoided by handling Fluid or concentrated solutions in a chemical hood which is adequately ventilated by lateral or down-draft suction.

G. Containers for Fluid or pieces of equipment contaminated with Fluid, which are open to the air in any way, must be kept and handled in the hood. The suction must be maintained while such articles are in the laboratory — i.e., until they have been cleaned up or otherwise disposed of.

H. In the event of spillage of ETHYL Fluid on the skin or clothing or on the floor, desks, or other equipment of the laboratory, it must be cleaned up at once. The skin should be washed thoroughly with kerosene or gasoline, followed by soap and water. Stained clothing should be removed promptly and rinsed repeatedly in gasoline, naphtha, or in non-inflammable dry cleaning fluids. Shoes and other leather articles cannot be cleaned and must be destroyed. Floors and equipment may be cleaned thoroughly with kerosene or with other suitable solvent, and then with soap and water. Rags, waste or other materials employed to wipe up spilled Fluid must be burned promptly or otherwise destroyed.

I. The handling of ETHYL Fluid by laboratory workers outside the laboratory, in making small mixes with liter cans for experimental purposes, or in *any other* manner, shall be done with the same precautions as are required of workmen in mixing plants. Such activities must be confined strictly to legitimate testing and experimental procedures. In all instances a gas mask, a rubber apron, and rubber gloves must be worn. The mask must have a rubber face-piece covering the entire face, eyes, nose and mouth, with eye-pieces of splinterless glass, a rubber breathing tube, and a canister separate from the face-piece, containing not less than 500 cc. of high grade activated charcoal. The apron must be of heavy rubber or rubberized cloth, while the gloves must be heavy enough to stand average use without tearing, and yet of such thinness and pliability as to permit precision in carrying out necessary laboratory manipulations.

V. INSTRUCTIONS FOR CLEANING TANKS USED FOR MIXING AND STORING LEADED GASOLINE AT REFINERIES AND MIXING PLANTS.

(The usual refinery rules for cleaning gasoline tanks do not provide safety against sludge and scale from tanks used for leaded gasoline, and the following rules must be added.)

A. Inside surfaces of the tank must be kept wet during the entire process of cleaning, to prevent breathing dust.

B. All workmen who enter the tanks must wear ***blower type air-line hose masks.***

C. All workmen must be furnished special coveralls, shirts, underwear, and socks; they must also wear heavy, acid-proof gloves in perfect condition, and rubber boots of good quality and in perfect condition.

D. Clothing must be changed and the face and hands must be cleaned at lunch time. At the end of work the clothing must be changed and a shower bath must be taken. The clothing must not be worn longer than one day, after which it must be laundered. Boots and gloves must be cleaned daily. If clothing is accidentally soaked with sludge from the bottom of the tank, it must be changed at once. Tools and the face-pieces of the masks must be cleaned daily.

E. Hose-lines for air-line masks have a limited life, and should be kept as clean as possible. They should be cleaned daily, and before being put away, preferably by hosing with water, thoroughly, to remove adherent material. When the odor of gasoline can be detected in the air stream, work must be discontinued promptly until the cause has been ascertained, or until a new hose-line has been substituted.

F. Sludge from the tank must not be left where anyone will come in contact with it. The sludge should be taken from the tank in a wet state and buried at some point where workmen will not uncover it in making excavations.

NOTE. Tank repairmen and welders must also follow these rules when working in tanks from which sludge and scale have not been removed. It is recommended that repairs and welding operations be carried out only after thorough removal of sludge, scale, and dust.

Form 336 L 52236 1500 3-38 Printed in U. S. A.

Form QD 37

EXHIBIT 9-A

ETHYL GASOLINE CORPORATION

LICENSE AND SALES AGREEMENT

THIS AGREEMENT, made in duplicate this _____ by and between ETHYL GASOLINE CORPORATION, a Delaware Corporation, as Licensor (however, for the purpose of more easily distinguishing between it and Licensee the Licensor will be referred to hereafter as Seller), and

a _____ Corporation, as Licensee (however, for the purpose of more easily distinguishing between it and Licensor, the Licensee will be referred to hereafter as Buyer).

WHEREAS, the Seller has been and is engaged in the devising and development of "Q" Brand of Anti-Knock Compound (the basic ingredient of which is now tetraethyl lead) which is for use in small proportions with motor fuel to reduce and/or prevent knocking of internal combustion engines, and is the sole and exclusive licensee under certain patents therefor, namely, United States Patents Number 1,573,846 of February 23, 1926, and Number 1,668,022 of May 1, 1928, and Number 1,787,419 of December 30, 1930, among others; and

WHEREAS, Buyer is engaged in the business of refining and selling gasoline and desires to sell during the continuance of this agreement a gasoline containing said anti-knock compound and for this purpose is desirous of purchasing same from Seller and obtaining from it a license under said patents to mix said anti-knock compound with gasoline and to sell the resultant product; and

WHEREAS, the Surgeon General of the United States Public Health Service has promulgated certain rules and regulations to be observed in connection with the handling and mixing of said anti-knock compound with gasoline and the distribution, use and consumption of the gasoline when treated with said anti-knock compound; and

WHEREAS, the parties hereto recognize that the purposes set forth in the preceding paragraphs can be effected only if proper precautions and care are used in the manufacture, distribution, use and consumption of gasoline treated with said anti-knock compound, and desire that the business contemplated being done under this license shall be conducted in accordance with the rules so promulgated and/or recommended by the Surgeon General of the United States Public Health Service and such other rules as may be now in existence or hereafter issued from time to time by that office, the Department of Health of the State and/or Municipality wherein such manufacture and/or sale is or are conducted, and any other governmental agency having jurisdiction in the premises, and with such care as to reduce to a minimum any possible risk of injury and exposure to employees and the public.

NOW, THEREFORE, THIS AGREEMENT WITNESSETH: That in consideration of the premises and of the covenants and agreements hereinafter set forth, said parties agree as follows:

I. LICENSE

Seller hereby licenses Buyer to manufacture gasoline containing said "Q" Brand of Anti-Knock Compound in the United States of America at the following points:

_____

and to sell and deliver same in the territory of the United States of America mentioned in the Addendum hereto, in the following manner and not otherwise.

(a) To oil companies holding a license from Seller to manufacture gasoline containing said anti-knock compound.

(b) To oil refining companies and jobbers who hold a license from Seller to sell (but not manufacture) gasoline containing said anti-knock compound.

(c) To actual users or consumers thereof, and in less than tank car lots directly to retail dealers for delivery directly by said dealers to users and consumers thereof.

(d) The gasoline manufactured hereunder shall be sold by the Buyer as the next highest priced motor fuel below Buyer's Ethyl Gasoline, and shall be Buyer's best non-premium gasoline referred to in the agreement between Seller and Buyer in respect to the manufacture and sale of Ethyl Gasoline.

Buyer agrees to discontinue deliveries of gasoline containing said anti-knock compound to any licensee referred to in subdivisions "(a)" and "(b)" immediately upon written notice to Buyer by Seller of the revocation of such licensee's license.

It is understood between the parties that "gasoline" includes any motor fuel; "anti-knock compound" refers to "Q" Brand of Anti-Knock Compound; and "treated gasoline" means any gasoline or motor fuel with which the said compound is mixed, wherever same may appear in this agreement.

II. PURCHASE AND SALE OF ANTI-KNOCK COMPOUND

Seller agrees to sell to Buyer said anti-knock compound, on orders received therefor, in suitable drums (containing not less than 50 U.S. Gallons of said anti-knock compound), or in tank trucks or tank cars, f.o.b. Seller's plant, but on shipments made in Seller's tank cars Seller will, effective January 1, 1937, prepay and absorb the freight from Seller's plant to destination, and on shipments made in Seller's tank trucks, Seller will, effective January 1, 1937, absorb the cost of delivery from Seller's plant to destination, with the understanding that Seller reserves the right to refuse to make tank truck deliveries whenever in Seller's opinion same are not practical and within a reasonable trucking distance from its plant, on the following terms:

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Effective on the signing of this agreement and during the period in the year 1937 that this agreement shall be in existence, the Seller agrees to sell and Buyer to pay Seller for all shipments of said anti-knock compound the sum of nine dollars and eighty-four and one-tenths cents ($9.841) per U.S. Gallon of commercially pure tetraethyl lead contained therein (which is equivalent to twenty-six one-hundredths (26/100) of a cent per cubic centimeter of commercially pure tetraethyl lead). Payment for said tetraethyl lead is to be made net cash within thirty (30) days after shipment.

Buyer shall pay Seller ten dollars ($10) for each drum in which said anti-knock compound is shipped and shall return the drums within thrity (30) days after they are emptied to Seller, freight collect, at such place or places as Seller may from time to time designate, and Seller shall pay Buyer ten dollars ($10) for each such drum so returned in as good condition as received by Buyer, ordinary wear and tear excepted.

II. HEALTH QUIREMENTS LATIVE TO NDLING AND XING OF ID ANTI-OCK COM-OUND AND STRIBUTION F GASOLINE NTAINING IT

(a) The mixing of said anti-knock compound with gasoline shall be done at the refinery or refineries of the Buyer, except for the existence of extraordinary circumstances, and then only upon the express written approval of Seller. The type and construction of the equipment and system employed for mixing shall in all cases meet with approval of Seller.

(b) Buyer agrees that it will carry out the handling and mixing of said compound with gasoline and the distribution and sale of the treated gasoline in accordance with the rules and regulations now in existence or which may be hereafter issued from time to time by the Seller, or the office of the Surgeon General of the United States Public Health Service, the Department of Health of the State and/or municipality wherein the mixing is done and the sales and distribution take place, and any other governmental agency having jurisdiction in the premises, and that it will have its employees properly instructed in respect to said rules and regulations.

(c) Buyer agrees that whenever it sells said treated gasoline for resale it will obligate the purchaser to comply with the provisions of the preceding paragraphs insofar as such provisions may apply to health measures in connection with its distribution and sale, and will supply the purchaser with notices giving information, instructions and rules for the guidance of employees and the public. In making such sales Buyer agrees to reserve the right to and will cancel such contract or contracts of sale in the event the purchaser or purchasers do not comply with any of the said requirements. Further, Buyer will require the said purchaser or purchasers to impose similar obligations for any and all subsequent sales of the said gasoline for resale, including the reserved right of cancellation and agreement to cancel for failure to comply.

(d) Medical and mechanical representatives of Seller shall be afforded every reasonable facility to inspect any of the apparatus, equipment or other property used by Buyer and the system employed by it, in connection with the handling of said

anti-knock compound, and the manufacture, distribution and sale of said gasoline. Buyer agrees to carry out and make the changes and/or repairs as such inspectors may from time to time reasonably require. Buyer agrees to permit the medical representatives of Seller to examine anyone under the control of Buyer whose work may have exposed him to the said anti-knock compound or to said treated gasoline, at any reasonable time said representatives may desire, and to follow all reasonable recommendations of such representatives as to observation, care and treatment of such persons. It is agreed Seller assumes no responsibility for or by reason of the issuance, promulgation or following of such rules, regulations and recommendations, nor as a result of such inspection and/or changes and repairs made as required by Seller, and Buyer agrees to hold Seller harmless for any injury or injuries or claim based upon an injury or alleged injury that may happen to an employee or employees of the Buyer or to anyone else in connection with Buyer's handling of said anti-knock compound and/or process of manufacturing and/or distribution of said treated gasoline, except in cases of proven negligence on the part of the Seller or its legal representatives.

IV. DELAYS IN SHIPMENTS

In case shipment of the said anti-knock compound ordered by Buyer shall at any time be delayed no liability for damage shall arise against Seller on account thereof. However, if the delay shall result from a lack of sufficient quantity on hand to enable Seller to make shipments to all licensees pursuant to their orders, Seller agrees in that event to use its best effort in allocating to Buyer such proportion of the available anti-knock compound as Buyer's orders bear to the total orders of all licensees.

V. STANDARDIZATION (FOR USE IN AUTOMOBILES)

The amount of said anti-knock compound to be added to Buyer's said gasoline shall be an amount--as determined by the present A.S.T.M. procedure (D357-33T)--to make the resultant product manufactured under this agreement have at the time of sale to the consumer an anti-knock value of not more than seventy (70) octane number, except by the written consent of the Seller.

The parties agree that said anti-knock compound shall not be mixed or sold with any gasoline that does not at least conform to the following specifications:

A. Distillation:-

From April 1st to October 1st, to wit:

Not less than 10% evaporated at 158 degrees Fahrenheit.
Not less than 50% evaporated at 284 degrees Fahrenheit.
Not less than 90% evaporated at 392 degrees Fahrenheit.

From October 1st to April 1st, to wit:

Not less than 10% evaporated at 149 degrees Fahrenheit.
Not less than 50% evaporated at 284 degrees Fahrenheit.
Not less than 90% evaporated at 392 degrees Fahrenheit.

Residue shall not be more than 2%.

B. Sulphur: -

Sulphur content shall not be more than 0.10%.

C. Corrosion: -

A clean copper strip shall not show more than extremely slight discoloration when submerged in the gasoline for 3 hours at 122 degrees Fahrenheit.

D. Gum:--

The parties hereto appreciate that improperly refined gasoline may contain gum-forming substances in sufficient amount to interfere with the proper operation of an internal combustion motor, and Buyer agrees that it will use due diligence to prevent the mixing of said anti-knock compound with such gasoline.

The maximum content of said tetraethyl lead shall be three (3) cubic centimeters per U.S. Gallon of gasoline treated.

Buyer will be responsible for the quality of said treated gasoline and guarantees to maintain the standards of quality and restrictions on tetraethyl lead content hereinbefore laid down.

Buyer agrees to submit to Seller's laboratory samples of said treated gasoline from time to time on request.

Buyer will not sell said gasoline for use in aircraft except in emergency circumstances.

VI. NAME OF PRODUCT

Buyer will not use the Ethyl trade-mark or design or the "Q" trade-mark or design or the name of the Ethyl Gasoline Corporation, or the word "Ethyl" or "Q" either alone or in combination with any other name, word or words or design, in the sale, offering for sale, and advertising of said treated gasoline under this license. Furthermore, if any purchaser for resale as herein stated fails to comply with this provision, then Buyer will discontinue the sale of said gasoline to such purchaser.

VII. COLOR

Buyer agrees that gasoline manufactured under this license shall be colored

VIII. DEFENSES AGAINST CLAIMS OF INFRINGEMENT OF TRADE-MARKS AND PATENTS

(a) Seller agrees, at its own expense, to defend Buyer and/or its customers in any action or actions that may be brought alleging that the use and/or sale in Buyer's gasoline of the anti-knock compound so supplied by Seller infringes any Letters Patent of the United States; and Seller agrees to pay any and all judgments for damages or profits arising out of such litigation that may be assessed against Buyer and/or its customers, thereby saving them harmless therefrom; all provided, however, that Seller shall be given prompt notice of any claim of infringement and is permitted to take full charge of the defense of any such suit or suits.

(b) It is agreed that Seller shall at all times have the right to substitute for its said "Q" Brand and/or the design or

manner of its use, another brand or design if in Seller's judgm said change be necessary to avoid adverse claims for trade-mark infringement.

IX. TRANSFORM "Q" TO "ETHYL" BRAND

Seller hereby licenses Buyer to transform said "Q" Brand of Anti-Knock Compound into Ethyl Brand of Anti-Knock Compound, in accordance with such regulations as may be established from tim to time by Seller, whereupon said Ethyl Brand of Anti-Knock Compound shall become subject to all the requirements of the License and Sales Agreement dated , between Seller and Buyer relating to the use and mixing of Ethyl Brand of Anti-knock Compound with gasoline to produce Ethyl Gasoline.

X. TERM AND TERMINATION OF CONTRACT

The term of this license shall extend to December 31, 1939, and indefinitely thereafter, subject, however, to the rights of cancellation as follows:

(a) Either party may at any time cancel this license agreement for failure of the other party to comply with any of its terms and conditions by serving written notice on the other of election so to do.

(b) Either party shall have the right to terminate this License and Sales Agreement, or any revision thereof, at any tim on giving the other party three (3) months' notice in writing to that effect.

(c) Without prejudice to any of Seller's rights aforementioned, in the event the License and Sales Agreement between parties hereto for the manufacture of Ethyl Gasoline, dated , shall terminate, then this agreement shall automatically terminate as of the same date.

(d) Without waiving or restricting in any manner any of Seller's rights set forth in this instrument, the Seller shall have the right at any time, on giving Buyer three (3) months' notice in writing to that effect, to substitute for this a new form of Liconse and Sales Agreement containing such changes and additions hereto as it may deem expedient, and same to become effective at the end of said three (3) months.

(e) Notice to either party under any provision of this license shall be deemed good and sufficient if sent by registered mail to the last known post office address of such party.

(f) Upon the termination of this agreement or any revision thereof, Buyer agrees to discontinue the use of said "Q" Brand of Anti-Knock Compound and the sale of gasoline containing the same.

XI. CONTRACT TO CONSTITUTE WHOLE AGREEMENT

Any license mentioned herein is and shall be non-exclusive, and this instrument embodies the whole contract between the parties. No change, addition or erasures of any printed portion hereof (except the filling in of blank lines) shall be valid or binding upon either party, except as provided above. It is declared that there are no oral or other agreements or understandings between the parties affecting this agreement.

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This agreement supersedes all previous agreements relating to the subject matter hereof between Buyer and Seller, and constitutes a personal contract; and further relates only to the territory of the United States of America mentioned in the addendum. Buyer shall not transfer or assign this agreement or any part hereof, without Seller's written consent.

IN WITNESS WHEREOF, the parties hereto have caused these presents to be duly executed the day and year first above written.

ttest:

ETHYL GASOLINE CORPORATION

By

Secretary President

ttest:

By

Secretary President

ADDENDUM

TERRITORY:

State of..

Form LE 37

EXHIBIT 9-B

ETHYL GASOLINE CORPORATION

LICENSE AND SALES AGREEMENT

THIS AGREEMENT, made in duplicate this
by and between ETHYL GASOLINE CORPORATION, a Delaware corporation, as Licensor (however, for the purpose of more easily distinguishing between it and Licensee the Licensor will be referred to hereafter as Seller), and

a corporation, as Licensee (however, for the purpose of more easily distinguishing between it and Licensor, the Licensee will be referred to hereafter as Buyer).

WHEREAS, the Seller has been and is engaged in the devising and development of "ETHYL" Brand of Anti-Knock Compound (the basic ingredient of which is now tetraethyl lead) which is for use in small proportions with motor fuel to reduce and/or prevent knocking of internal combustion engines, and is the sole and exclusive licensee under certain patents therefor, namely, United States Patents Number 1,573,846 of February 23, 1926, and Number 1,668,022 of May 1, 1928, and Number 1,767,419 of December 30, 1930, among others; and

WHEREAS, Buyer is engaged in the business of refining and selling gasoline and desires to sell during the continuance of this agreement a gasoline which is of high quality, and for this purpose is desirous of purchasing said anti-knock compound from Seller and obtaining from it a license under said patents to mix said anti-knock compound with gasoline (thereby manufacturing under said patents the resultant product known and sometimes hereafter referred to as Ethyl Gasoline) and to sell same; and

WHEREAS, the Surgeon General of the United States Public Health Service has promulgated certain rules and regulations to be observed in connection with the handling and mixing of the said anti-knock compound with gasoline and the distribution, use and consumption of the gasoline when treated with said anti-knock compound; and

WHEREAS, the parties hereto recognize that the purposes set forth in the preceding paragraphs can be effected only if proper precautions and care are used in the manufacture, distribution, use and consumption of gasoline treated with said anti-knock compound, and desire that the business contemplated being done under this license shall be conducted in accordance with the rules so promulgated and/or recommended by the Surgeon General of the United States Public Health Service and such other rules as may be now in existence or hereafter issued from time to time by that office, the Department of Health of the State and/or Municipality wherein such manufacture and/or sale is or are conducted, and any other governmental agency having jurisdiction in the premises, and with such care as to reduce to a minimum any possible risk of injury and exposure to employees and the public.

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NOW, THEREFORE, THIS AGREEMENT WITNESSETH: That in consideration of the premises and of the covenants and agreements hereinafter set forth, said parties agree as follows:

I. LICENSE Seller hereby licenses Buyer to manufacture said Ethyl Gasoline in the United States of America at the following points:

and to sell and deliver same in the territory of the United States of America mentioned in the addendum hereto, in the following manner, and not otherwise:

(a) To oil companies holding a license from Seller to manufacture gasoline containing said anti-knock compound, on condition, however, that the said product will be resold--whether directly or indirectly--under the brand name of the purchasing licensee and that both the vendor and purchaser thereof guarantee that it at least conforms to the standard of quality as herein specified. The Seller hereby reserves the right to cancel this provision (sub-division "(a)" of Clause "I") on giving ninety (90) days' notice in writing to that effect to Buyer; and

(b) To oil refining companies holding a license from Seller to sell (but not manufacture) Ethyl Gasoline; and

(c) To jobbers who hold a license from Seller to sell Ethyl Gasoline.

(d) To actual users or consumers thereof, and in less than tank car lots directly to retail dealers for delivery directly to said dealers to users and consumers thereof.

(e) At net prices (whether in barge, tank car, tank wagon, or otherwise), for sales to jobbers (coming within paragraph "(c)" above) not less than one and one-quarter (1.25) cents per U.S. Gallon for sales to retail dealers (coming within paragraph "(d)" above) not less than one and five-tenths (1.5) cents per U.S. Gallon, for sales to actual users and consumers (coming within paragraph "(d)" above) not less than two (2) cents per U.S. Gallon, above the average net sale price of licensee's best (non-premium) grade of commercial gasoline, for substantially the same time, locality, quantity and condition.

It is understood that the above provision as to price has no reference to the resale price of said product after it shall have been sold by the Buyer herein--the manufacturer of said treated gasoline under said patent and/or patents.

(f) Buyer will furnish Seller from time to time, upon written request therefor, a list containing the points at which and the purchasers to whom gasoline treated with said anti-knock compound is sold by it within subdivisions "(a)", "(b)" and "(c)" above.

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Buyer agrees to discontinue deliveries of Ethyl Gasoline to any licensee referred to in said subdivision "(a)", "(b)" and "(c)", immediately upon written notice to Buyer by Seller of the revocation of such licensee's license.

It is understood between the parties that "gasoline" includes any motor fuel; "anti-knock compound" refers to "ETHYL" brand of Anti-Knock Compound, and "treated gasoline" means any gasoline or motor fuel with which the "ETHYL" Brand of Anti-Knock Compound is mixed, wherever same any appear in this agreement.

II. PURCHASE AND SALE OF ANTI-KNOCK COMPOUND

Seller agrees to sell to Buyer said anti-knock compound on orders received therefor, in suitable drums (containing not less than 50 U.S. Gallons of said anti-knock compound), or in tank trucks or tank cars, f.o.b. Seller's plant, but on shipments made in Seller's tank cars Seller will, effective January 1, 1937, prepay and absorb the freight from Seller's plant to destination, and on shipments made in Seller's tank trucks, Seller will, effective January 1, 1937, absorb the cost of delivery from Seller's plant to destination, with the understanding that Seller reserves the right to refuse to make tank truck deliveries whenever in Seller's opinion same are not practical and within a reasonable trucking distance from its plant, on the following terms:

Effective on the signing of this agreement and during the period in the year 1937 that this agreement shall be in existence, the Seller agrees to sell and Buyer to pay Seller for all shipments of said anti-knock compound the sum of nine dollars and eighty-four and one-tenths cents ($9.841) per U.S.Gallon of commercially pure tetraethyl lead contained therein (which is equivalent to twenty-six one-hundredths (26/100) of a cent per cubic centimeter of commercially pure tetraethyl lead). Payment for said tetraethyl lead is to be made net cash within thirty (30) days after shipment.

Buyer shall pay Seller ten dollars ($10) for each drum in which said anti-knock compound is shipped and shall return the drums within thirty (30) days after they are emptied to Seller, freight collect, at such place or places as Seller may from time to time designate, and Seller shall pay Buyer ten dollars ($10) for each such drum so returned in as good condition as received by Buyer, ordinary wear and tear excepted.

III. HEALTH REQUIREMENTS RELATIVE TO HANDLING AND MIXING ETHYL FLUID AND DISTRIBUTION OF GASOLINE CONTAINING IT

(a) The mixing of said anti-knock compound with gasoline shall be done at the refinery or refineries of the Buyer, except for the existence of extraordinary circumstances, and then only upon the express written approval of Seller. The type and construction of the equipment and system employed for mixing shall in all cases meet with the approval of Seller.

(b) Buyer agrees that it will carry out the handling and mixing of said compound with gasoline and the distribution and sale of the treated gasoline in accordance with the rules and regulations now in existence or which may be hereafter issued from time

to time by the Seller, or the office of the Surgeon General of the United States Public Health Service, the Department of Health of the State and/or Municipality wherein the mixing i. ions and the sales and distribution take place, and any other governmental agency having jurisdiction in the premises, and that it will have its employees properly instructed in respect to said rules and regulations.

(c) Buyer agrees that whenever it sells said treated gasoline for resale it will obligate the purchaser to comply with the provisions of the preceding paragraphs insofar as such provisions may apply to health measures in connection with its distribution and sale, and will supply the purchaser with notices giving information, instructions and rules for the guidance of employees and the public. In making such sales Buyer agrees to reserve the right to and will cancel such contract or contracts of sale in the event the purchaser or purchasers do not comply with any of the said requirements. Further, Buyer will require the said purchaser or purchasers to impose similar obligations for any and all subsequent sales of the said gasoline for resale, including the reserved right of cancellation and agreement to cancel for failure to comply.

(d) Medical and mechanical representatives of Seller shall be afforded every reasonable facility to inspect any of the apparatus, equipment or other property used by Buyer and the system employed by it, in connection with the handling of said anti-knock compound, and the manufacture, distribution and sale of said gasoline. Buyer agrees to carry out and make the changes and/or repairs as such inspectors may from time to time reasonably require. Buyer agrees to permit the medical representatives of Seller to examine anyone under the control of Buyer whose work may have exposed him to the said anti-knock compound or to said treated gasoline, at any reasonable time said representatives may desire, and to follow all reasonable recommendations of such representatives as to observation, care and treatment of such persons. It is agreed Seller assumes no responsibility for or by reason of the issuance, promulgation or following of such rules, regulations and recommendations, nor as a result of such inspection and/or changes and repairs made as required by Seller, and Buyer agrees to hold Seller harmless for any injury or injuries or claim based upon an injury or alleged injury that may happen to an employee or employee of the Buyer or to anyone else in connection with Buyer's handling of said anti-knock compound and/or process of manufacturing and/or distribution of said treated gasoline, except in cases of proven negligence on the part of the Seller or its legal representatives.

IV. DELAYS IN SHIPMENTS

In case shipment of the said anti-knock compound ordered by Buyer shall at any time be delayed no liability for damage shall arise against Seller on account thereof. However, if the delay shall result from a lack of sufficient quantity on hand to enable Seller to make shipments to all licensees pursuant to their orders Seller agrees in that event to use its best effort in allocating to Buyer such proportion of the available anti-knock compound as Buyer's orders bear to the total orders of all licensees.

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V. STANDARDIZATION (FOR USE IN AUTOMOBILES)

The amount of "ETHYL" fluid to be added to Buyer's gasoline shall be at least sufficient--as determined by Seller's laboratory--to make it equal in anti-knock value to the standard Ethyl Gasoline as fixed by Seller. A reasonable number of samples of said standard will be supplied Buyer on request.

The method of determining the amount of "ETHYL" fluid to be added to Buyer's gasoline shall be the present A.S.T.M. procedure (D357-33T).

The parties hereto recognize that it would be detrimental to the good will in and reputation of said compound if it were used in gasoline not conforming to certain standard of quality, and the parties therefore agree that the said anti-knock compound shall not be mixed or sold with any gasoline that does not have the following distillation characteristics:

From April 1st to October 1st, to wit:

Not less than 10% evaporated at 158 degrees Fahrenheit.
Not less than 50% evaporated at 284 degrees Fahrenheit.
Not less than 90% evaporated at 392 degrees Fahrenheit.

From October 1st to April 1st, to wit:

Not less than 10% evaporated at 149 degrees Fahrenheit.
Not less than 50% evaporated at 284 degrees Fahrenheit.
Not less than 90% evaporated at 392 degrees Fahrenheit.

Residue shall not be more than 2%.

Sulphur content shall not be more than 0.10%.

Corrosion: A clean copper strip shall not show more than extremely slight discoloration when submerged in the gasoline for 3 hours at 122 degrees Fahrenheit.

Gum: The parties hereto appreciate that improperly refined gasoline may contain gum-forming substances in sufficient amount to interfere with the proper operation of an internal combustion motor, and Buyer agrees that it will use due diligence to prevent the mixing of "ETHYL" fluid with such gasoline. In the event the Seller shall determine from samples of such gasoline as may be submitted by Buyer for blending with "ETHYL" fluid that by reason of gum content it would be detrimental to the reputation of said anti-knock compound to treat such grade of gasoline with "ETHYL" fluid, then such decision shall be accepted by the Buyer as final.

The parties recognize that it may be expedient to change Seller's standard of quality and/or methods of test from time to time to keep abreast of advances in the art of refining and/or automotive engineering, and therefore the Seller reserves the right to make changes at any time upon giving ninety (90) days' written notice in advance to Buyer.

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In order to insure that the Ethyl Gasoline manufactured by the Buyer under this license conforms to at least the minimum requirements of this agreement, the following procedure shall be followed in reference to each and every individual proposed mixture of said anti-knock compound with Buyer's gasoline (unless written exception may have been made by Seller because of the existence of unusual circumstances) to wit:

1. Buyer shall send to Seller's laboratory a sample of the base stock proposed to be mixed by Buyer.

2. Seller's laboratory shall test it and its determination shall be accepted as final by Buyer.

3. If Seller reports that the sample is a gasoline meeting its requirements as a base stock for mixture with said "ETHYL" fluid, then Buyer will mix at least the amount of tetraethyl lead per gallon of gasoline so found to be required by Seller's laboratory.

4. Buyer will then send to Seller's laboratory a sample of the product so mixed, and agrees not to deliver any part of said mixture until it has received information from Seller that it meets the above specifications.

Buyer also agrees to use its best endeavors to insure that all Ethyl Gasoline sold by it and delivered to the consumer directly or through resellers, shall conform to a standard of quality at least equal to said specifications, and will not make further deliveries to any reseller in whose possession the said product is found not to conform to said specifications, unless an explanation satisfactory to Seller shall be made in writing by said reseller.

The minimum content of tetraethyl lead in said Ethyl Gasoline manufactured and/or sold by the Buyer hereunder shall be in the proportion of 1 to 4206 by volume for commercially pure tetraethyl lead (which is equal to nine-tenths (9/10) of a cubic centimeter of tetraethyl lead per U.S. Gallon of gasoline) and the maximum content of said tetraethyl lead in a U.S. Gallon of gasoline shall be in the proportion of 1 to 1260 by volume (which is equal to three (3) cubic centimeters of tetraethyl lead per U.S. Gallon of gasoline).

The parties hereto appreciate that gasoline for use in aircraft should have certain characteristics different from those for use in automobile motors of today and that it might be detrimental to the good will in and reputation of said anti-knock compound if the minimum standard referred to in this clause "(V)" should be used in aircraft motors. It is, therefore, agreed that the Buyer will not sell said gasoline for use in aircraft except under emergency circumstances.

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AME OF UCT.

Buyer agrees that in selling, offering for sale and/or advertising gasoline treated with said anti-knock compound it will apply to said gasoline the name Ethyl Gasoline with the registered trade-mark design and name of Seller connected therewith and in a form satisfactory to Seller (except in sales referred to in subdivision "(a)" of Clause " I ", and as may otherwise be granted in writing by Seller) and will obligate purchasers for resale to conform to this requirement.

Buyer agrees that in selling to oil refining companies and jobbers (who are licensed by Seller as contemplated in subdivisions "(a)", "(b)" and"(c)" of Clause " I ") it will reserve the right under such contract or contracts of sale, to and will cancel same, and will not make delivery of any of said treated gasoline to any such licensee upon receipt of written notice from Seller of the revocation of the license.

BUYER'S ATION TO OP ESS

Buyer agrees that it will advertise and diligently push the use and sale of Ethyl Gasoline.

DEFENSES AIMS OF NGEMENT ADE-MARKS ATENTS

(a) Buyer recognizes the validity of all Letters Patent relating to the said anti-knock compound and its use of which Seller is now or may be within the terms of this contract the sole and exclusive licensee, and agrees, during the period of this License Agreement, not to engage in such practices as may infringe the Seller's patent rights, as aforesaid.

(b) Seller agrees, at its own expense, to defend Buyer and/or its customers in any action or actions that may be brought alleging that the use and/or sale in Buyer's gasoline of the anti-knock compound so supplied by Seller infringes any Letters Patent of the United States; and Seller agrees to pay any and all judgments for damages or profits arising out of such litigation that may be assessed against Buyer and/or its customers, thereby saving them harmless therefrom; all provided, however, that Seller shall be given prompt notice of any claim of infringement and is permitted to take full charge of the defense of any such suit or suits.

(c) Seller agrees to assume any and all responsibility for trade-mark, label or analogous infringement, including rights relating to unfair competition, with which Buyer or those to whom it sells for resale may be charged for employing in their advertisements the trade-marks of Seller, and Seller will, at its own expense, defend any or all litigation based on the use of such trade-marks and pay any judgment or judgments that may be awarded to the plaintiff in the premises or the amount of any settlement therein, if settlement be made by Seller, all provided Seller is promptly notified of such claim and permitted to have full control of defending same.

IX. TERM AND TERMINATION OF CONTRACT

The term of this license shall extend to December 31, 1937, and indefinitely thereafter, subject, however, to the rights of cancellation as follows:

(a) Either party may at any time cancel this license agreement for failure of the other party to comply with any of its terms and conditions by serving written notice on the other of its election so to do.

(b) Without waiving any of Seller's rights set forth in this instrument, the Seller shall have the right in October of any year to substitute for this a new form of License and Sales Agreement containing such changes and/or additions hereto as it may deem expedient, and same to become effective at the end of the following December; or it may in October of any year notify in writing the Buyer of any such changes and/or additions to this instrument, which when accepted by Buyer shall have the same force and effect--commencing as of the end of the following December--as if embodied in a new form of License and Sales Agreement; provided, however, that such changes and/or additions (whether included in a new form or evidenced by written notice from Seller to Buyer) do not impair the obligations of the Seller as set forth in Clause VIII, entitled "Defenses of Claims of Infringement of Trade-Marks and Patents", and are to apply for general use with other licensees in the United States of America holding a form of license similar to this (being Form DZ 37). If Buyer shall not indicate acceptance of such changes and/or additions within sixty (60) days after receipt of notice thereof from Seller (in the event such changes and/or additions are not embodied in a formal document) then this License and Sales Agreement shall immediately become null and void.

(c) The Buyer shall have the right (with or without cause) to terminate this License and Sales Agreement, or any revision thereof, at any time on giving Seller one hundred and eighty (180) days' notice in writing to that effect, and Seller shall have the right (with or without cause) to terminate this License and Sales Agreement, or any revision thereof, at any time after December 31, 1937, on giving to Buyer twelve (12) months' notice in writing to that effect.

(d) Notice to either party under any provision of this license shall be deemed good and sufficient if sent by registered mail to the last known post office address of such party.

(e) Upon the termination of this agreement or any revision and/or renewal thereof, Buyer agrees to discontinue the sale and/or advertisement for sale of gasoline containing any of said anti-knock compound, and the use of the name Ethyl or Ethyl Gasoline in any manner, and also the use of any trade-mark design or trade name belonging to or controlled by Seller.

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. CONTRACT. O CONSTITUTE HOLE GREEMENT

Any license mentioned herein is and shall be non-exclusive, and this instrument embodies the whole contract between the parties. No change, addition or erasures of any printed portion hereof (except the filling in of blank lines) shall be valid or binding upon either party, except as provided above. It is declared that there are no oral or other agreements or understandings between the parties affecting this agreement.

This agreement supersedes all previous agreements relating to the subject matter hereof between Buyer and Seller and/or between Buyer and Seller's assignor, the General Motors Chemical Company; and further, constitutes a personal contract. Buyer shall not transfer or assign same or any part hereof nor shall Buyer sell or offer for sale Ethyl Gasoline to any person, firm or corporation by means of brokerage or other than through Buyer's own organization, without Seller's written consent.

IN WITNESS WHEREOF, the parties hereto have caused these presents to be duly executed the day and year first above written.

ttest:

ETHYL GASOLINE CORPORATION

By

Secretary

President

ttest:

By

Secretary

President

45

EXHIBIT 9-A

Refiners License Agreement

NON-MANUFACTURING

ETHYL GASOLINE CORPORATION

WITH

.....

.....

Dated .....

Form "Ethyl E"

ETHYL GASOLINE CORPORATION

Refiners License Agreement

(NON-MANUFACTURING)

THIS AGREEMENT, made in duplicate this ..... day of ....., 19..... by and between ETHYL GASOLINE CORPORATION, a Delaware corporation, hereinafter called the LICENSOR, and

a {individual / co-partnership / corporation} .....

hereinafter called the LICENSEE:

WHEREAS, the Licensor has been and is engaged in the devising and development of "ETHYL" Brand of Anti-Knock Compound (the basic ingredient of which is now tetraethyl lead) which is being and is intended to be added in small proportion to gasoline to reduce and/or prevent knocking of internal combustion engines, and is the sole and exclusive licensee under certain patents therefor, namely, United States Patents Number 1,573,846 of February 23, 1926, and Number 1,668,022 of May 1, 1928; and

WHEREAS, the Licensee is engaged in the business of refining and selling gasoline and intends to sell during the continuance of this agreement a gasoline which is of high quality, and for this purpose is desirous of obtaining a license under said patents to sell and deliver said gasoline when treated with the said anti-knock compound (hereafter referred to as Ethyl Gasoline); and

WHEREAS, the Surgeon General of the United States Public Health Service has promulgated certain rules and regulations to be observed in connection with the handling, transportation, use, and distribution of gasoline when treated with said anti-knock compound; and

WHEREAS, the parties hereto recognize that the purposes set forth in the preceding paragraphs can be effected only if proper precautions and care are used in the distribution, use and consumption of gasoline treated with said anti-knock compound, and desire that the business contemplated being done under this license shall be conducted in accordance with the rules so promulgated and/or recommended by the Surgeon General of the United States Public Health Service and such other rules as may be now in existence or hereafter issued from time to time by that office, and any other governmental agency having jurisdiction in the premises, and with such care as to reduce to a minimum any possible risk of injury and exposure to employees and the public.

NOW, THEREFORE, THIS AGREEMENT WITNESSETH: That in consideration of the premises and of the covenants and agreements hereinafter set forth, said parties agree as follows:

1. LICENSE Licensor hereby licenses Licensee to sell and deliver Ethyl Gasoline in the territory of the United States of America mentioned in the addendum hereto, in the following manner, and not otherwise:

(a) To those who hold a license from Licensor to sell (but not manufacture) Ethyl Gasoline.

(b) To actual users or consumers thereof, and in less than tank car lots to retail dealers for delivery directly by said dealers to users and consumers thereof.

(c) Licensee agrees that it will supply to Licensor upon written request therefor, a list, revised monthly, of all points at which Ethyl Gasoline is sold by it as contemplated in paragraphs "a" and "b" and the amount thereof, and also a list of those purchasing in tank car lots.

Licensee agrees to discontinue deliveries to any purchaser, referred to in said subdivision "a", immediately upon notice by Licensor of the revocation of such purchaser's license.

It is understood between the parties that "gasoline" includes any motor fuel; "anti-knock compound" refers to "ETHYL" Brand of Anti-Knock Compound, and "treated gasoline" means any gasoline or motor fuel with which the "ETHYL" Brand of Anti-Knock Compound is mixed, wherever same may appear in this agreement.

II. INSTRUCTIONS FOR (a) Licensee agrees to comply with all rules and regulations now in existence or which may be hereafter issued from time to time by the Licensor (it being understood that they will include those [illegible] Surgeon General of the United States Public Health Service), and any govern-

(c) Licensee agrees to permit a medical representative of Licensor to examine anyone under the control of Licensee whose work is apt to or may have exposed him to the said gasoline, at any reasonable time said representative may desire, and to carry out the recommendations of such representative.

(d) Licensee agrees that whenever it sells such gasoline for resale it will obligate the purchaser to comply with the provisions of paragraphs (a), (b) and (c) immediately preceding. In making such sales the Licensee agrees to reserve the right to and will cancel such contract or contracts of sale in the event the purchaser or purchasers do not comply with any of the said requirements.

III. STANDARDIZATION

Licensee recognizes that it would be detrimental to the good will in and reputation of gasoline containing said compound sold under the ETHYL trade-mark if it does not conform to a certain standard of quality established from time to time by the Licensor. Therefore, the Licensee agrees not to adulterate or modify or permit to be adulterated or modified said gasoline distributed pursuant to this license, and will not sell or offer for sale any gasoline claimed or reputed to be ETHYL Gasoline which in any manner does not conform at least to the minimum standard so established by Licensor. Further, whenever Licensee sells said gasoline for resale it will obligate the purchaser to comply with the terms of this clause entitled "Standardization", and will reserve the right to cancel its contract of sale for breach of such clause.

The parties hereto appreciate that gasoline for use in aircraft should have certain characteristics different from those for use in automobile motors of today and that it might be detrimental to the good will in and the reputation of said anti-knock compound if gasoline with which said anti-knock compound has been mixed for use in automobile motors should be used for aviation purposes. Licensee therefore agrees not to sell or offer for sale for use in aircraft motors gasoline containing said anti-knock compound designed primarily for use in automobile motors, except under emergency circumstances.

IV. NAME OF PRODUCT

Licensee agrees that in selling, offering for sale and/or advertising gasoline treated with said anti-knock compound it will apply to said gasoline the name ..... Ethyl Gasoline with the registered trade-mark design and name of Licensor connected therewith and in a form satisfactory to Licensor, and will obligate purchasers for resale to conform to this requirement.

If any purchaser for resale as herein stated fails to comply with this provision, then Licensee will discontinue the sale of gasoline treated with said anti-knock compound to such purchaser.

V. LICENSEE'S OBLIGATION TO DEVELOP BUSINESS

Licensee agrees that it will advertise and diligently push the use and sale of ..... Ethyl Gasoline.

If Licensee has been selling Ethyl Gasoline for the past six months and shall fail, so long as this agreement shall be in existence, (1) to sell Ethyl Gasoline continuously after November 1, 1930 in any state wherein Licensee is then or thereafter marketing Ethyl Gasoline and one or more other premium priced gasolines (exclusive of gasoline for aviation) from at least one-half as many of Licensee's owned and otherwise controlled filling stations therein and from which Licensee is distributing such non-ETHYL premium gasoline, and (2) by and through at least one-quarter of as many of Licensee's dealers as may be handling its non-ETHYL premium gasoline therein, and (3) to at least expend each year in advertising Ethyl Gasoline in such state an amount which shall be in proportion to the total expended by the Licensee in advertising all brands of premium priced gasoline therein as the total sales of gallons of Ethyl Gasoline by the Licensee therein bear to the total sales of gallons of all brands of premium priced gasoline by the Licensee during the year; then Licensor shall have the right to determine that such failure constitutes a breach of Licensee's obligation to push the use and sale of Ethyl Gasoline, and Licensor may at any time cancel this License Agreement by reason thereof if such default is not rectified within ninety (90) days after written notice given by Licensor to Licensee.

If Licensee has not been selling Ethyl Gasoline for the past six months, and so long as this agreement shall be in existence, shall fail (1) to sell Ethyl Gasoline continuously after the expiration of six (6) months from the date of this agreement in any state wherein Licensee is then or thereafter marketing Ethyl Gasoline and one or more other premium priced gasolines (exclusive of gasoline for aviation) from at least one-half as many of Licensee's owned and otherwise controlled filling stations therein and from which Licensee is distributing such non-ETHYL premium gasoline, and (2) by and through at least one-quarter of as many of Licensee's dealers as may be handling its non-ETHYL premium gasoline therein, and (3) to at least expend each year in advertising Ethyl Gasoline in such state an amount which shall be in proportion to the total expended by the Licensee in advertising all brands of premium priced gasoline therein as the total sales of gallons of Ethyl Gasoline by the Licensee therein bear to the total sales of gallons of all brands of premium priced gasoline by the Licensee during the year, then Licensor shall have the right to determine that such failure constitutes a breach of Licensee's obligation to push the use and sale of Ethyl Gasoline, and Licensor may at any time cancel this License Agreement by reason thereof if such default is not rectified within ninety (90) days after written notice given by Licensor to Licensee.

(The word "dealer" as used in this Clause (V) means one who buys in tank wagon lots for resale.)

It is understood and agreed that the sale of Ethyl Gasoline by and through the minimum number of stations and dealers and the expenditure for advertising as set forth in the two preceding paragraphs shall not of itself be evidence of compliance with the obligation to push the use and sale of Ethyl Gasoline, as it is recognized by the parties hereto that there are other ways and means by

which in any manner does not conform in respect to the minimum standards ... Further, whenever Licensee sells said gasoline for resale it will obligate the purchaser to comply with the terms of this clause entitled "Standardization", and will reserve the right to cancel its contract of sale for breach of such clause.

The parties hereto appreciate that gasoline for use in aircraft should have certain characteristics different from those for use in automobile motors of today and that it might be detrimental to the good will in and the reputation of said anti-knock compound if gasoline with which said anti-knock compound has been mixed for use in automobile motors should be used for aviation purposes. Licensee therefore agrees not to sell or offer for sale for use in aircraft motors gasoline containing said anti-knock compound designed primarily for use in automobile motors, except under emergency circumstances.

IV. NAME OF PRODUCT

Licensee agrees that in selling, offering for sale and/or advertising gasoline treated with said anti-knock compound it will apply to said gasoline the name ..... Ethyl Gasoline with the registered trade-mark design and name of Licensor connected therewith and in a form satisfactory to Licensor, and will obligate purchasers for resale to conform to this requirement.

If any purchaser for resale as herein stated fails to comply with this provision, then Licensee will discontinue the sale of gasoline treated with said anti-knock compound to such purchaser.

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If Licensee has been selling Ethyl Gasoline for the past six months and shall fail, so long as this agreement shall be in existence, (1) to sell Ethyl Gasoline continuously after November 1, 1930 in any state wherein Licensee is then or thereafter marketing Ethyl Gasoline and one or more other premium priced gasolines (exclusive of gasoline for aviation) from at least one-half as many of Licensee's owned and otherwise controlled filling stations therein and from which Licensee is distributing such non-ETHYL premium gasoline, and (2) by and through at least one-quarter of as many of Licensee's dealers as may be handling its non-ETHYL premium gasoline therein, and (3) to at least expend each year in advertising Ethyl Gasoline in such state an amount which shall be in proportion to the total expended by the Licensee in advertising all brands of premium priced gasoline therein as the total sales of gallons of Ethyl Gasoline by the Licensee therein bear to the total sales of gallons of all brands of premium priced gasoline by the Licensee during the year, then Licensor shall have the right to determine that such failure constitutes a breach of Licensee's obligation to push the use and sale of Ethyl Gasoline, and Licensor may at any time cancel this License Agreement by reason thereof if such default is not rectified within ninety (90) days after written notice given by Licensor to Licensee.

If Licensee has not been selling Ethyl Gasoline for the past six months, and so long as this agreement shall be in existence, shall fail (1) to sell Ethyl Gasoline continuously after the expiration of six (6) months from the date of this agreement in any state wherein Licensee is then or thereafter marketing Ethyl Gasoline and one or more other premium priced gasolines (exclusive of gasoline for aviation) from at least one-half as many of Licensee's owned and otherwise controlled filling stations therein and from which Licensee is distributing such non-ETHYL premium gasoline, and (2) by and through at least one-quarter of as many of Licensee's dealers as may be handling its non-ETHYL premium gasoline therein, and (3) to at least expend each year in advertising Ethyl Gasoline in such state an amount which shall be in proportion to the total expended by the Licensee in advertising all brands of premium priced gasoline therein as the total sales of gallons of Ethyl Gasoline by the Licensee therein bear to the total sales of gallons of all brands of premium priced gasoline by the Licensee during the year, then Licensor shall have the right to determine that such failure constitutes a breach of Licensee's obligation to push the use and sale of Ethyl Gasoline, and Licensor may at any time cancel this License Agreement by reason thereof if such default is not rectified within ninety (90) days after written notice given by Licensor to Licensee.

(The word "dealer" as used in this Clause (V) means one who buys in tank wagon lots for resale.)

It is understood and agreed that the sale of Ethyl Gasoline by and through the minimum number of stations and dealers and the expenditure for advertising as set forth in the two preceding paragraphs shall not of itself be evidence of compliance with the obligation to push the use and sale of Ethyl Gasoline, as it is recognized by the parties hereto that there are other ways and means by which Licensee might fail to comply with that obligation.

VI. TRADE-MARK AND PATENTS

(a) Licensee recognizes the validity of all Letters Patent relating to the said anti-knock compound and its use of which Licensor is the sole and exclusive Licensee, and agrees, during the period of this contract, not to engage in any such practices as may infringe the Licensor's patent rights as aforesaid.

(b) Licensor agrees to assume any and all responsibility for trade-mark, label or analogous infringement, including rights relating to unfair competition, with which Licensee or those to whom it sells for resale may be charged for employing in their advertisements the trade-mark of Licensor, and Licensor will, at its own expense, defend any or all ligitation based on the use of said word or words and pay any judgment or judgments that may be awarded to the plaintiff in the premises or the amount of any settlement therein, if settlement be made by Licensor, all provided Licensor is promptly notified of such claim and permitted to have full control of defending same.

(c) Licensor agrees, at its own expense, to defend Licensee and/or its customers in any action or actions that may be brought alleging that the use and/or sale of gasoline containing said anti-knock compound supplied by Licensor infringes any Letters Patent; and Licensor agrees to pay any and all judgments for damages or profits arising out of such litigation that may be assessed against Licensee and/or its customers, thereby saving them harmless therefor; all provided, however, that Licensor shall be given prompt notice of any claim of infringement and is permitted to take full charge of the defense of any such suit or suits.

VII. TERM AND TERMINATION OF CONTRACT

The term of this license shall extend to December 31, 1930, and indefinitely thereafter, subject, however, to the rights of cancellation as follows:

(a) Either party may at any time cancel this license agreement for failure of the other party to comply with any of its terms and conditions by serving written notice on the other of its election so to do.

(b) Either party shall have the right after December 31, 1930 (with or without cause) to terminate this License and Sales Agreement, or any revision thereof, by giving to the other party three (3) months written notice to that effect.

(c) Without waiving any of Licensor's rights set forth in this instrument, the Licensor shall have the right in July of any year to substitute for this a new form of License Agreement containing such changes and/or additions hereto as it may deem expedient, and same to become effective at the end of the following October; or it may in July of any year notify in writing the Licensee of any such changes and/or additions to this instrument, which when accepted by Licensee shall have the same force and effect—commencing as of the end of the following October—as if embodied in a new form of License Agreement; provided, however, that such changes and/or additions (whether included in a new form or evidenced by written notice from Licensor to Licensee) are to apply for general use with other licensees in the United States of America holding a similar form of license. If Licensee shall not indicate acceptance of any such new form by signing and returning same to Licensor within thirty (30) days after its receipt from Licensor, or if Licensee shall not give written notice to Licensor of acceptance of such changes and/or additions within thirty (30) days after receipt of notice thereof from Licensor (in the event such changes and/or additions are not embodied in a formal document) then this License Agreement shall immediately become null and void.

(d) Notice to either party under any provision of this license shall be deemed good and sufficient if sent by registered mail to the last known post office address of such party.

(e) Upon the termination of this agreement or any revision and/or renewal thereof, Licensee agrees to discontinue the sale and/or advertisement for sale of gasoline containing any of said anti-knock compound, and the use of the name Ethyl or Ethyl Gasoline in any manner, and also the use of any trade-mark design or trade name belonging to or controlled by Licensor.

VIII. CONTRACT TO CONSTITUTE WHOLE AGREEMENT

Any license mentioned herein is and shall be non-exclusive, and this instrument embodies the whole contract between the parties. No change, addition or erasures of any printed portion hereof (except the filling in of blank lines) shall be valid or binding upon either party, except as provided above. It is declared that there are no oral or other agreements or understandings between the parties affecting this agreement.

This agreement supersedes all previous agreements relating to the subject matter hereof between the parties hereto; and, further, constitutes a personal contract. Licensee shall not transfer or assign same or any part hereof nor shall Licensee sell or offer for sale Ethyl Gasoline to any person, firm or corporation by means of brokerage or other than through its own organization, without Licensor's written consent.

IN WITNESS WHEREOF, the parties hereto have caused these presents to be duly executed the day and year first above written.

ETHYL GASOLINE CORPORATION

Attest:

By .....

charge of the defense of any such suit or suits.

VII. TERM AND TERMINATION OF CONTRACT

The term of this license shall extend to December 31, 1930, and indefinitely thereafter, subject, however, to the rights of cancellation as follows:

(a) Either party may at any time cancel this license agreement for failure of the other party to comply with any of its terms and conditions by serving written notice on the other of its election so to do.

(b) Either party shall have the right after December 31, 1930 (with or without cause) to terminate this License and Sales Agreement, or any revision thereof, by giving to the other party three (3) months written notice to that effect.

(c) Without waiving any of Licensor's rights set forth in this instrument, the Licensor shall have the right in July of any year to substitute for this a new form of License Agreement containing such changes and/or additions hereto as it may deem expedient, and same to become effective at the end of the following October; or it may in July of any year notify in writing the Licensee of any such changes and/or additions to this instrument, which when accepted by Licensee shall have the same force and effect—commencing as of the end of the following October—as if embodied in a new form of License Agreement; provided, however, that such changes and/or additions (whether included in a new form or evidenced by written notice from Licensor to Licensee) are to apply for general use with other licensees in the United States of America holding a similar form of license. If Licensee shall not indicate acceptance of any such new form by signing and returning same to Licensor within thirty (30) days after its receipt from Licensor, or if Licensee shall not give written notice to Licensor of acceptance of such changes and/or additions within thirty (30) days after receipt of notice thereof from Licensor (in the event such changes and/or additions are not embodied in a formal document) then this License Agreement shall immediately become null and void.

(d) Notice to either party under any provision of this license shall be deemed good and sufficient if sent by registered mail to the last known post office address of such party.

(e) Upon the termination of this agreement or any revision and/or renewal thereof, Licensee agrees to discontinue the sale and/or advertisement for sale of gasoline containing any of said anti-knock compound, and the use of the name Ethyl or Ethyl Gasoline in any manner, and also the use of any trade-mark design or trade name belonging to or controlled by Licensor.

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Any license mentioned herein is and shall be non-exclusive, and this instrument embodies the whole contract between the parties. No change, addition or erasures of any printed portion hereof (except the filling in of blank lines) shall be valid or binding upon either party, except as provided above. It is declared that there are no oral or other agreements or understandings between the parties affecting this agreement.

This agreement supersedes all previous agreements relating to the subject matter hereof between the parties hereto; and, further, constitutes a personal contract. Licensee shall not transfer or assign same or any part hereof nor shall Licensee sell or offer for sale Ethyl Gasoline to any person, firm or corporation by means of brokerage or other than through its own organization without Licensor's written consent.

IN WITNESS WHEREOF, the parties hereto have caused these presents to be duly executed the day and year first above written.

ETHYL GASOLINE CORPORATION

Attest:

..... By .....

Secretary President

Attest:

..... By .....

Secretary President

50

Addendum

TERRITORY:

County of.....

.....

.....

.....

State of.....

.....

.....

.....

EXHIBIT 13-A

ETHYL GASOLINE CORPORATION

CHRYSLER BUILDING
135 EAST 42ND STREET
NEW YORK

RULES AND REGULATIONS

FOR DISTRIBUTION OF ETHYL GASOLINE
(NO MATTER UNDER WHAT NAME IT MAY BE SOLD)

1. Each filling station shall have prominently displayed at the pump the following warning:

"Contains
Lead

(Tetraethyl) and is to be used as motor fuel only, not for cleaning or any other use.
Avoid spilling."

2. Suitable leaflets shall be available at all filling stations where Ethyl Gasoline is sold, for distribution on request. These leaflets shall describe the possible dangers and precautions to be taken in the use of Ethyl Gasoline.

3. Containers of Ethyl Gasoline sold to the general public shall be labeled:

"Contains
Lead

(Tetraethyl) and is to be used as motor fuel only, not for cleaning or any other use.
Avoid spilling."

1. Do not use it in lamps or stoves or for cooking purposes of any kind.
2. Never use it for cleaning tools, machinery, clothing or hands.
3. Do not carelessly spill it.
4. Avoid spilling it on your clothing or skin.
5. In operations where skin contact is unavoidable, such as removing valves from cars for drainage of residual gasoline, it is recommended that soap and water be immediately used to wash the hands and arms wherever practicable. The use of waste or other absorbent material for the removal of gasoline from the skin is suggested as a second possibility.
6. Wash your hands before food, tobacco or anything else is conveyed to the mouth, after handling motor parts of the exhaust or fuel system of an automobile.

Motorists are reminded that there is danger involved in handling all kinds of motor fuel. When

RULES AND REGULATIONS

FOR DISTRIBUTION OF ETHYL GASOLINE (NO MATTER UNDER WHAT NAME IT MAY BE SOLD)

1. Each filling station shall have prominently displayed at the pump the following warning:

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2. Suitable leaflets shall be available at all filling stations where Ethyl Gasoline is sold, for distribution on request. These leaflets shall describe the possible dangers and precautions to be taken in the use of Ethyl Gasoline.

3. Containers of Ethyl Gasoline sold to the general public shall be labeled:

"Contains
Lead

(Tetraethyl) and is to be used as motor fuel only, not for cleaning or any other use.
Avoid spilling."

Ethyl Gasoline is intended and sold only as a motor fuel and not for the various other purposes for which ordinary gasoline is used; and in order to prevent possible misuse, you are advised:

1. Do not use it in lamps or stoves or for cooking purposes of any kind.
2. Never use it for cleaning tools, machinery, clothing or hands.
3. Do not carelessly spill it.
4. Avoid spilling it on your clothing or skin.
5. In operations where skin contact is unavoidable, such as removing valves from cars for drainage of residual gasoline, it is recommended that soap and water be immediately used to wash the hands and arms wherever practicable. The use of waste or other absorbent material for the removal of gasoline from the skin is suggested as a second possibility.
6. Wash your hands before food, tobacco or anything else is conveyed to the mouth, after handling motor parts of the exhaust or fuel system of an automobile.

Motorists are reminded that there is danger involved in handling all kinds of motor fuel. When breathed as vapor, or when absorbed through the skin in sufficient quantity, any kind of gasoline will produce serious results; and when allowed to remain in contact with the skin it frequently produces irritation and blistering.

(The Ethyl trademark design and name shall appear on each pump dispensing Ethyl Gasoline.)

"PRINTED IN U. S. A."

1941

ETHYL GASOLINE CORPORATION

Jobber License Agreement

THIS AGREEMENT, made in duplicate this.....day of.....193....., by and between ETHYL GASOLINE CORPORATION, a Delaware corporation, hereinafter called the LICENSOR, and

a { individual / co-partnership / corporation } .....

hereinafter called the LICENSEE:

WHEREAS, the Licensor has been and is engaged in devising and developing a certain "ETHYL" Brand of Anti-knock Compound (the basic ingredient of said anti knock compound being now tetraethyl lead) which is being and is intended to be added in small proportion to gasoline and other motor fuels to reduce and/or prevent knocking of internal combustion engines, and is the sole and exclusive licensee under certain patents therefor, namely, United States Patents Number 1,573,846 of February 23, 1926, and Number 1,668,022 of May 1, 1928; and Number 1,787,419 of December 30, 1930, among others; and

WHEREAS, the Licensee is engaged in the business of selling gasoline and intends to sell during the continuance of this agreement a gasoline which is of high quality, and for this purpose is desirous of obtaining a License, under said patents, to sell and deliver gasoline when treated with the said anti-knock compound; and

WHEREAS, the Surgeon General of the United States Public Health Service has promulgated certain rules and regulations to be observed in connection with the handling, transportation, use, consumption and distribution of gasoline treated with tetraethyl lead, and the parties hereto desire that the business contemplated being done under this license shall be conducted in accordance with such rules and with such care as to reduce to a minimum any possible risk of injury and exposure to employees and the public.

NOW, THEREFORE, in consideration of the premises and of the covenants and the agreements hereinafter set forth, the said parties agree as follows:

I. LICENSE

(a) Licensor hereby licenses Licensee to sell and deliver in the territory of the United States of America mentioned on the reverse side of this sheet, and not elsewhere, the improved motor fuel, defined in the aforesaid patents, in quantities less than tank car lots only, and only to users and consumers thereof or directly to retail dealers for delivery directly by said dealers to users and consumers thereof, on the condition, however, that the Licensee shall have purchased said improved motor fuel from a manufacturer holding a license from the Licensor under said patents.

(b) Licensee agrees that it will supply to Licensor a list, revised monthly, of all points at which motor fuel delivered under this License is sold as provided in Paragraph (a).

II. INSTRUCTIONS FOR HANDLING

(a) Licensee shall cause any notices giving information for the guidance of employees handling said treated gasoline and purchasers thereof, furnished it by Licensor or the refinery selling Licensee such gasoline, to be posted and/or distributed in accordance with the regulations hereinafter mentioned.

(b) Licensee agrees to acquaint itself and comply with all rules and regulations issued from time to time by Licensor and the office of the Surgeon General of the United States Public Health Service, the Department of Health of the State and/or Municipality wherein Licensee's business is carried on, and any other governmental agency having jurisdiction in the premises relative to the distribution and sale of gasoline containing said anti-knock compound.

(c) Licensee agrees to permit a medical representative of Licensor to examine anyone under the control of Licensee whose work is apt to or may have exposed him to the said gasoline, at any reasonable time said representative may desire, and to carry out the recommendations of such representative.

(d) Licensee agrees that whenever it sells such gasoline for resale, it will obligate the purchaser to comply with provisions of paragraphs (a), (b) and (c) immediately preceding, and will supply the purchaser with notices giving information, instructions and rules for the guidance of employees handling such gasoline and the purchasers thereof. In making such sales the Licensee agrees to reserve the right to and will cancel such contract or contracts of sale in the event the purchaser or purchasers do not comply with any of the said requirements.

III. STANDARDIZATION

Licensee recognizes that it would be detrimental to the good will in and reputation of gasoline containing said compound sold under the ETHYL trade-mark if it does not conform to a certain standard of quality established from time to time by the Licensor. Therefore, the Licensee agrees not to adulterate or modify or permit to be adulterated or modified said gasoline distributed pursuant to this license, and will not sell or offer for sale any gasoline claimed or reputed to be Ethyl Gasoline which in any manner does not conform at least to the minimum standard so established by Licensor. Further, whenever Licensee sells said gasoline for resale it will obligate the purchaser to comply with the terms of this clause entitled "Standardization," and will reserve the right to cancel its contract of sale for breach of such clause.

The parties hereto appreciate that gasoline for use in aircraft should have certain char-

a { individual / co-partnership / corporation } .....

hereinafter called the LICENSEE:

WHEREAS, the Licensor has been and is engaged in devising and developing a certain "ETHYL" Brand of Anti-knock Compound (the basic ingredient of said anti knock compound being now tetraethyl lead) which is being and is intended to be added in small proportion to gasoline and other motor fuels to reduce and/or prevent knocking of internal combustion engines, and is the sole and exclusive licensee under certain patents therefor, namely, United States Patents Number 1,573,846 of February 23, 1926, and Number 1,668,022 of May 1, 1928; and Number 1,787,419 of December 30, 1930, among others; and

WHEREAS, the Licensee is engaged in the business of selling gasoline and intends to sell during the continuance of this agreement a gasoline which is of high quality, and for this purpose is desirous of obtaining a License, under said patents, to sell and deliver gasoline when treated with the said anti-knock compound; and

WHEREAS, the Surgeon General of the United States Public Health Service has promulgated certain rules and regulations to be observed in connection with the handling, transportation, use, consumption and distribution of gasoline treated with tetraethyl lead, and the parties hereto desire that the business contemplated being done under this license shall be conducted in accordance with such rules and with such care as to reduce to a minimum any possible risk of injury and exposure to employees and the public.

NOW, THEREFORE, in consideration of the premises and of the covenants and the agreements hereinafter set forth, the said parties agree as follows:

I. LICENSE

(a) Licensor hereby licenses Licensee to sell and deliver in the territory of the United States of America mentioned on the reverse side of this sheet, and not elsewhere, the improved motor fuel, defined in the aforesaid patents, in quantities less than tank car lots only, and only to users and consumers thereof or directly to retail dealers for delivery directly by said dealers to users and consumers thereof, on the condition, however, that the Licensee shall have purchased said improved motor fuel from a manufacturer holding a license from the Licensor under said patents.

(b) Licensee agrees that it will supply to Licensor a list, revised monthly, of all points at which motor fuel delivered under this License is sold as provided in Paragraph (a).

II. INSTRUCTIONS FOR HANDLING

(a) Licensee shall cause any notices giving information for the guidance of employees handling said treated gasoline and purchasers thereof, furnished it by Licensor or the refinery selling Licensee such gasoline, to be posted and/or distributed in accordance with the regulations hereinafter mentioned.

(b) Licensee agrees to acquaint itself and comply with all rules and regulations issued from time to time by Licensor and the office of the Surgeon General of the United States Public Health Service, the Department of Health of the State and/or Municipality wherein Licensee's business is carried on, and any other governmental agency having jurisdiction in the premises relative to the distribution and sale of gasoline containing said anti-knock compound.

(c) Licensee agrees to permit a medical representative of Licensor to examine anyone under the control of Licensee whose work is apt to or may have exposed him to the said gasoline, at any reasonable time said representative may desire, and to carry out the recommendations of such representative.

(d) Licensee agrees that whenever it sells such gasoline for resale, it will obligate the purchaser to comply with provisions of paragraphs (a), (b) and (c) immediately preceding, and will supply the purchaser with notices giving information, instructions and rules for the guidance of employees handling such gasoline and the purchasers thereof. In making such sales the Licensee agrees to reserve the right to and will cancel such contract or contracts of sale in the event the purchaser or purchasers do not comply with any of the said requirements.

III. STANDARDIZATION

Licensee recognizes that it would be detrimental to the good will in and reputation of gasoline containing said compound sold under the ETHYL trade-mark if it does not conform to a certain standard of quality established from time to time by the Licensor. Therefore, the Licensee agrees not to adulterate or modify or permit to be adulterated or modified said gasoline distributed pursuant to this license, and will not sell or offer for sale any gasoline claimed or reputed to be Ethyl Gasoline which in any manner does not conform at least to the minimum standard so established by Licensor. Further, whenever Licensee sells said gasoline for resale it will obligate the purchaser to comply with the terms of this clause entitled "Standardization," and will reserve the right to cancel its contract of sale for breach of such clause.

The parties hereto appreciate that gasoline for use in aircraft should have certain characteristics different from those for use in automobile motors of today and that it might be detrimental to the good will in and reputation of said anti-knock compound if gasoline with which said anti-knock compound has been mixed for use in automobile motors should be used for aviation purposes. Licensee therefore agrees not to sell or offer for sale for use in aircraft motors gasoline containing said anti-knock compound designed primarily for use in automobile motors, except under emergency circumstances.

IV. LICENSEE'S OBLIGATION TO DEVELOP BUSINESS

1. Licensee agrees to diligently push the use and sale of gasoline treated with the said anti-knock compound—referred to as Ethyl Gasoline—and will furnish to Licensor, upon written request therefor, such record of sales as will correctly indicate its percentage of sales of Ethyl Gasoline relative to its total sales of gasoline from time to time, so as to afford a reasonable check on this provision.

V. NAME OF PRODUCT

(a) Licensee agrees that in selling, offering for sale, and/or advertising all of its gasoline treated with said anti-knock compound, it will apply to said gasoline the name

.....ETHYL Gasoline (and none other), with the registered trade-mark design and name of Licensor connected therewith. Licensee agrees that whenever it sells gasoline containing said anti-knock compound for resale it will obligate the purchaser to sell, offer for sale and/or advertise the said gasoline under the said name.....ETHYL Gasoline (and none other), with the registered trade-mark design and name of Licensor connected therewith.

(In the event the Licensee sells or offers for sale Ethyl Gasoline under the brand name of the company supplying it with such gasoline (associated with the registered trade-mark design and name of Licensor) then this license shall become void upon discontinuance of deliveries of Ethyl Gasoline by such supplying company to Licensee.)

VI. TRADE-MARK AND PATENTS

(a) Licensee recognizes the validity of all Letters Patent relating to said anti-knock compound and its use of which Licensor is the sole and exclusive licensee, and agrees, during the period of this contract, not to engage in such practices as may infringe the Licensor's patent rights as aforesaid.

(b) Licensor agrees to assume any and all responsibility for trade-mark, label or analogous infringement, including rights relating to unfair competition, with which Licensee or those to whom it sells for resale may be charged for employing in their advertisements the trade-mark of Licensor, and Licensor will, at its own expense, defend any or all litigation based on the use of said word or words and pay any judgment or judgments that may be awarded to the plaintiff in the premises or the amount of any settlement therein, if settlement be made by Licensor, all provided Licensor is promptly notified of such claim and permitted to have full control of defending same.

(c) Licensor agrees, at its own expense, to defend Licensee and/or its customers in any action or actions that may be brought alleging that the use and/or sale of anti-knock compound so supplied by Licensor infringes any Letters Patent of the United States; and Licensor agrees to pay any and all judgments for damages or profits arising out of such litigation that may be assessed against Licensee and/or its customers, thereby saving them harmless therefor; all provided, however, that Licensor shall be given prompt notice of any claim of infringement and is permitted to take full charge of the defense of any such suit or suits.

VII. TERM AND TERMINATION OF LICENSE

The term of this license shall extend indefinitely, subject, however, to the rights of cancellation as follows:

(a) Each of the parties hereto shall have the right (with or without cause) to terminate this license at any time on giving to the other thirty (30) days' notice in writing to that effect.

(b) Licensor may at any time cancel this license by serving Licensee written notice of its election so to do if Licensee fails to comply with any of its terms or conditions.

(c) Notice to either party under any provision of this license shall be deemed good and sufficient if sent by registered mail to the last known post office address of such party.

(d) Without waiving any of Licensor's rights hereinabove described, Licensor may (if this agreement is still in existence) in October of any year substitute for this a new form of license containing new provisions which Licensor has adopted for general use with other non-exclusive licensees, and if Licensee should refuse to accept such substitution, then, in that event, Licensor may cancel this license by giving thirty (30) days' notice in writing to Licensee of its election so to do.

(e) Upon the termination of this agreement or any renewal hereof, Licensee agrees to discontinue the sale and/or advertisement for sale of gasoline containing any of said anti-knock compound, and the use of the name "ETHYL" in any manner.

VIII. CONTRACT TO CONSTITUTE WHOLE AGREEMENT

Any license granted herein is and shall be non-exclusive, and this instrument embodies the whole contract between the parties. No change, addition or erasure of any printed portion hereof (except the filling in of blank lines) shall be valid or binding upon either party. It is declared that there are no oral or other agreements or understandings between them affecting this agreement.

This agreement supersedes all previous agreements, relating to the subject matter, had between Licensor and Licensee; and further, constitutes a personal contract and Licensee shall not transfer or assign same or any part hereof without Licensor's written consent.

This agreement does not constitute Licensee or its purchaser the agent or legal representative of Licensor for any purpose whatsoever.

IN WITNESS WHEREOF, the parties hereto have caused these presents to be duly executed the day and year first above written.

Attest:

ETHYL GASOLINE CORPORATION

.....
Secretary

By .....
Sales Manager

(b) Licensor agrees to assume any and all responsibility for trade-mark, label or analogous infringement, including rights relating to unfair competition, with which Licensee or those to whom it sells for resale may be charged for employing in their advertisements the trade-mark of Licensor, and Licensor will, at its own expense, defend any or all litigation based on the use of said word or words and pay any judgment or judgments that may be awarded to the plaintiff in the premises or the amount of any settlement therein, if settlement be made by Licensor, all provided Licensor is promptly notified of such claim and permitted to have full control of defending same.

(c) Licensor agrees, at its own expense, to defend Licensee and/or its customers in any action or actions that may be brought alleging that the use and/or sale of anti-knock compound so supplied by Licensor infringes any Letters Patent of the United States; and Licensor agrees to pay any and all judgments for damages or profits arising out of such litigation that may be assessed against Licensee and/or its customers, thereby saving them harmless therefor; all provided, however, that Licensor shall be given prompt notice of any claim of infringement and is permitted to take full charge of the defense of any such suit or suits.

VII. TERM AND TERMINATION OF LICENSE

The term of this license shall extend indefinitely, subject, however, to the rights of cancellation as follows:

(a) Each of the parties hereto shall have the right (with or without cause) to terminate this license at any time on giving to the other thirty (30) days' notice in writing to that effect.

(b) Licensor may, at any time cancel this license by serving Licensee written notice of its election so to do if Licensee fails to comply with any of its terms or conditions.

(c) Notice to either party under any provision of this license shall be deemed good and sufficient if sent by registered mail to the last known post office address of such party.

(d) Without waiving any of Licensor's rights hereinabove described, Licensor may (if this agreement is still in existence) in October of any year substitute for this a new form of license containing new provisions which Licensor has adopted for general use with other non-exclusive licensees, and if Licensee should refuse to accept such substitution, then, in that event, Licensor may cancel this license by giving thirty (30) days' notice in writing to Licensee of its election so to do.

(e) Upon the termination of this agreement or any renewal hereof, Licensee agrees to discontinue the sale and/or advertisement for sale of gasoline containing any of said anti-knock compound, and the use of the name "ETHYL" in any manner.

VIII. CONTRACT TO CONSTITUTE WHOLE AGREEMENT

Any license granted herein is and shall be non-exclusive, and this instrument embodies the whole contract between the parties. No change, addition or erasure of any printed portion hereof (except the filling in of blank lines) shall be valid or binding upon either party. It is declared that there are no oral or other agreements or understandings between them affecting this agreement.

This agreement supersedes all previous agreements, relating to the subject matter, had between Licensor and Licensee; and further, constitutes a personal contract and Licensee shall not transfer or assign same or any part hereof without Licensor's written consent.

This agreement does not constitute Licensee or its purchaser the agent or legal representative of Licensor for any purpose whatsoever.

IN WITNESS WHEREOF, the parties hereto have caused these presents to be duly executed the day and year first above written.

Attest: **ETHYL GASOLINE CORPORATION**

..... Secretary

By ..... Sales Manager

Attest: ACCEPTED:

..... Secretary

By ..... President

L. 48569 Form 105-10M-5-37
Printed in U.S.A.

126

EXHIBIT 13-B

ETHYL GASOLINE CORPORATION
CHRYSLER BUILDING
405 LEXINGTON AVENUE
NEW YORK

RULES AND REGULATIONS

For Distribution of Gasoline treated with "Q" Brand of Anti-knock Compound

Each filling station shall have prominently displayed on the pump from which it is dispensed, the following notice:

FOR USE AS A
MOTOR FUEL ONLY
CONTAINS
LEAD
(TETRAETHYL)

Containers of treated gasoline sold to the general public shall be labeled:

FOR USE AS A
MOTOR FUEL ONLY
CONTAINS
LEAD
(TETRAETHYL)

Treated gasoline is intended and sold only as a motor fuel and for no other purpose.

There is danger involved in handling all kinds of motor fuel. When breathed as a vapor, or when absorbed through the skin in sufficient quantity, any kind of gasoline will produce serious results, and when allowed to remain in contact with the skin it frequently produces irritation and blistering.

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(TETRAETHYL)

Treated gasoline is intended and sold only as a motor fuel and for no other purpose.

There is danger involved in handling all kinds of motor fuel. When breathed as a vapor, or when absorbed through the skin in sufficient quantity, any kind of gasoline will produce serious results, and when allowed to remain in contact with the skin it frequently produces irritation and blistering.

L 47399 FORM 221.5M 1-37
"PRINTED IN U. S. A."

Form "Jobber Q"

ETHYL GASOLINE CORPORATION

Jobber License Agreement

THIS AGREEMENT, made in duplicate this _____ day of _____, 193__, by and between ETHYL GASOLINE CORPORATION, a Delaware corporation, hereinafter called the LICENSOR, and

a { individual / co-partnership / corporation } _____

hereinafter called the LICENSEE:

WHEREAS, the Licensor has been and is engaged in devising and developing "Q" Brand of Anti-Knock Compound (the basic ingredient of which is now tetraethyl lead) which is intended to be added in small proportion to gasoline to increase its octane value, and is the sole and exclusive Licensee under certain patents therefor, namely, United States Patents Number 1,573,846 of February 23, 1926, and Number 1,668,022 of May 1, 1928, and Number 1,787,419 of December 30, 1930, among others; and

WHEREAS, the Licensee is engaged in the business of selling gasoline and is desirous of obtaining a License, under said patents, to sell and deliver gasoline when treated with the said anti-knock compound; and

WHEREAS, the Licensor has promulgated certain rules and regulations to be observed in connection with the handling, transportation, use and distribution of gasoline treated with said anti-knock compound (which embody those recommended by the Surgeon General of the United States Public Health Service).

NOW, THEREFORE, in consideration of the premises and of the covenants and the agreements hereinafter set forth, the said parties agree as follows:

I. LICENSE

(a) Licensor hereby licenses Licensee to sell and deliver in the territory of the United States of America mentioned on the reverse side of this sheet, and not elsewhere, the improved motor fuel, defined in the aforesaid patents, in quantities less than tank car lots only, and only to users and consumers thereof or to retail dealers for delivery directly by said dealers to users and consumers thereof, on the condition, however, that the Licensee shall have purchased said improved motor fuel from a manufacturer holding a license from the Licensor under said patents.

(b) Licensee agrees that it will supply to Licensor upon written request a list, revised monthly, of all points at which motor fuel delivered under this license is sold as provided in Paragraph (a).

II. INSTRUCTIONS FOR HANDLING

(a) Licensee agrees to comply with all rules and regulations now in existence or which may be hereafter issued from time to time by the Licensor (it being understood that they will include those recommended by the Surgeon General of the United States Public Health Service), and any governmental agency having jurisdiction in the premises relative to the distribution and sale of said gasoline.

(b) Licensee shall cause any notices (furnished by the Licensor or the refinery selling Licensee such gasoline) for the guidance of employees handling said treated gasoline and purchasers thereof to be posted and/or distributed in accordance with the regulations above mentioned.

(c) Licensee agrees to permit a medical representative of Licensor to examine anyone under the control of Licensee whose work is apt to or may have exposed him to the said gasoline, at any reasonable time said representative may desire, and to carry out the recommendations of such representative.

(d) Licensee agrees that whenever it sells such gasoline for resale, it will obligate the purchaser to comply with provisions of paragraphs (a), (b) and (c) immediately preceding, and will supply the purchaser with notices giving information, instructions and rules for the guidance of employees handling such gasoline and the purchasers thereof. In making such sales the Licensee agrees to reserve the right to and will cancel such contract or contracts of sale in the event the purchaser or purchasers do not comply with any of the said requirements.

III. STANDARDIZATION

Licensee agrees not to adulterate or modify or permit to be adulterated or modified said gasoline distributed pursuant to this license. Further, whenever Licensee sells said gasoline for resale it will obligate the purchaser to comply with the terms of this clause entitled "Standardization" and will reserve the right to cancel its contract of sale for breach of such clause.

Licensee will not sell said gasoline for use in aircraft except under emergency circumstances.

IV. NAME OF PRODUCT

(a) Licensee agrees that in selling, offering for sale and/or advertising the gasoline covered by this license, it will apply the name _____ Gasoline (and none other).

WHEREAS, the Licensor has been and is engaged in devising and developing "Q" Brand of Anti-Knock Compound (the basic ingredient of which is now tetraethyl lead) which is intended to be added in small proportion to gasoline to increase its octane value, and is the sole and exclusive Licensee under certain patents therefor, namely, United States Patents Number 1,573,846 of February 23, 1926, and Number 1,668,022 of May 1, 1928, and Number 1,787,419 of December 30, 1930, among others; and

WHEREAS, the Licensee is engaged in the business of selling gasoline and is desirous of obtaining a License, under said patents, to sell and deliver gasoline when treated with the said anti-knock compound; and

WHEREAS, the Licensor has promulgated certain rules and regulations to be observed in connection with the handling, transportation, use and distribution of gasoline treated with said anti-knock compound (which embody those recommended by the Surgeon General of the United States Public Health Service).

NOW, THEREFORE, in consideration of the premises and of the covenants and the agreements hereinafter set forth, the said parties agree as follows:

I. LICENSE

(a) Licensor hereby licenses Licensee to sell and deliver in the territory of the United States of America mentioned on the reverse side of this sheet, and not elsewhere, the improved motor fuel, defined in the aforesaid patents, in quantities less than tank car lots only, and only to users and consumers thereof or to retail dealers for delivery directly by said dealers to users and consumers thereof, on the condition, however, that the Licensee shall have purchased said improved motor fuel from a manufacturer holding a license from the Licensor under said patents.

(b) Licensee agrees that it will supply to Licensor upon written request a list, revised monthly, of all points at which motor fuel delivered under this license is sold as provided in Paragraph (a).

II. INSTRUCTIONS FOR HANDLING

(a) Licensee agrees to comply with all rules and regulations now in existence or which may be hereafter issued from time to time by the Licensor (it being understood that they will include those recommended by the Surgeon General of the United States Public Health Service), and any governmental agency having jurisdiction in the premises relative to the distribution and sale of said gasoline.

(b) Licensee shall cause any notices (furnished by the Licensor or the refinery selling Licensee such gasoline) for the guidance of employees handling said treated gasoline and purchasers thereof to be posted and/or distributed in accordance with the regulations above mentioned.

(c) Licensee agrees to permit a medical representative of Licensor to examine anyone under the control of Licensee whose work is apt to or may have exposed him to the said gasoline, at any reasonable time said representative may desire, and to carry out the recommendations of such representative.

(d) Licensee agrees that whenever it sells such gasoline for resale, it will obligate the purchaser to comply with provisions of paragraphs (a), (b) and (c) immediately preceding, and will supply the purchaser with notices giving information, instructions and rules for the guidance of employees handling such gasoline and the purchasers thereof. In making such sales the Licensee agrees to reserve the right to and will cancel such contract or contracts of sale in the event the purchaser or purchasers do not comply with any of the said requirements.

III. STANDARDIZATION

Licensee agrees not to adulterate or modify or permit to be adulterated or modified said gasoline distributed pursuant to this license. Further, whenever Licensee sells said gasoline for resale it will obligate the purchaser to comply with the terms of this clause entitled "Standardization" and will reserve the right to cancel its contract of sale for breach of such clause.

Licensee will not sell said gasoline for use in aircraft except under emergency circumstances.

IV. NAME OF PRODUCT

(a) Licensee agrees that in selling, offering for sale and/or advertising the gasoline covered by this license, it will apply the name_____Gasoline (and none other).

(b) Licensee will not use the Ethyl trade-mark or design or the "Q" trade-mark or design or the name of the Ethyl Gasoline Corporation, or the word "ETHYL" or "Q" either alone or in combination with any other name, word or words or design, in the sale, offering for sale, and advertising of said treated gasoline under this license. Furthermore, if any purchaser for resale as herein stated fails to comply with this provision, then Licensee will discontinue the sale of said gasoline to such purchaser.

(In the event the Licensee sells or offers for sale said gasoline under the brand name of the company supplying it with such gasoline, then this license shall become void upon discontinuance of deliveries of such gasoline by such supplying company to Licensee. In the event that the Licensee sells or offers for sale said gasoline under a brand name other than that of the company supplying it, then upon request Licensee will furnish Licensor with the name of the company or companies supplying such gasoline.)

V. TRADE-MARK AND PATENTS

(a) Licensee recognizes the validity of all Letters Patent relating to said anti-knock compound and its use of which Licensor is the sole and exclusive licensee, and agrees, during the period of this contract, not to engage in such practices as may infringe the Licensor's patent rights as aforesaid.

(b) Licensor agrees, at its own expense, to defend Licensee and/or its customers in any action or actions that may be brought alleging that the use and/or sale of anti-knock compound so supplied by Licensor infringes any Letters Patent of the United States; and Licensor agrees to pay any and all judgments for damages or profits arising out of such litigation that may be assessed against Licensee and/or its customers, thereby saving them harmless therefor; all provided, however, that Licensor shall be given prompt notice of any claim of infringement and is permitted to take full charge of the defense of any such suit or suits.

VI. TERM AND TERMINATION OF LICENSE

The term of this license shall extend indefinitely, subject, however, to the rights of cancellation as follows:

(a) Each of the parties hereto shall have the right (with or without cause) to terminate this license at any time on giving to the other thirty (30) days' notice in writing to that effect.

(b) Licensor may at any time cancel this license by serving Licensee written notice of its election so to do if Licensee fails to comply with any of its terms or conditions.

(c) Notice to either party under any provision of this license shall be deemed good and sufficient if sent by registered mail to the last known post office address of such party.

(d) Without waiving any of Licensor's rights hereinabove described, Licensor may (if this agreement is still in existence) in June of any year substitute for this a new form of license containing new provisions which Licensor has adopted for general use with other licensees in the United States holding a similar form of license.

(e) Upon the termination of this agreement or any renewal hereof, Licensee agrees to discontinue the sale and/or advertisement for sale of gasoline containing any of said anti-knock compound.

VII. CONTRACT TO CONSTITUTE WHOLE AGREEMENT

Any license granted herein is and shall be non-exclusive, and this instrument embodies the whole contract between the parties. No change, addition or erasure of any printed portion hereof (except the filling in of blank lines) shall be valid or binding upon either party. It is declared that there are no oral or other agreements or understandings between the parties affecting this agreement.

This agreement supersedes all previous agreements, relating to the subject matter, had between Licensor and Licensee; and further, constitutes a personal contract and Licensee shall not transfer or assign same or any part hereof without Licensor's written consent.

This agreement does not constitute Licensee or its purchaser the agent or legal representative of Licensor for any purpose whatsoever.

IN WITNESS WHEREOF, the parties hereto have caused these presents to be duly executed the day and year first above written.

Attest: ETHYL GASOLINE CORPORATION

_____ By _____

Secretary Sales Manager

Attest: ACCEPTED:

_____ By _____

Secretary President

(b) Licensor may at any time cancel this license by serving Licensee written notice of its election so to do if Licensee fails to comply with any of its terms or conditions.

(c) Notice to either party under any provision of this license shall be deemed good and sufficient if sent by registered mail to the last known post office address of such party.

(d) Without waiving any of Licensor's rights hereinabove described, Licensor may (if this agreement is still in existence) in June of any year substitute for this a new form of license containing new provisions which Licensor has adopted for general use with other licensees in the United States holding a similar form of license.

(e) Upon the termination of this agreement or any renewal hereof, Licensee agrees to discontinue the sale and/or advertisement for sale of gasoline containing any of said anti-knock compound.

VII. CONTRACT TO CONSTITUTE WHOLE AGREEMENT

Any license granted herein is and shall be non-exclusive, and this instrument embodies the whole contract between the parties. No change, addition or erasure of any printed portion hereof (except the filling in of blank lines) shall be valid or binding upon either party. It is declared that there are no oral or other agreements or understandings between the parties affecting this agreement.

This agreement supersedes all previous agreements, relating to the subject matter, had between Licensor and Licensee; and further, constitutes a personal contract and Licensee shall not transfer or assign same or any part hereof without Licensor's written consent.

This agreement does not constitute Licensee or its purchaser the agent or legal representative of Licensor for any purpose whatsoever.

IN WITNESS WHEREOF, the parties hereto have caused these presents to be duly executed the day and year first above written.

Attest: ETHYL GASOLINE CORPORATION

_____ By _____

Secretary Sales Manager

Attest: ACCEPTED:

_____ By _____

Secretary President

FORM 819—L. 47600 SM 1-37 "PRINTED IN U. S. A."

REGULATIONS PROPOSED FOLLOWING THE TETRAETHYL LEAD INVESTIGATION

These regulations have been formulated in accordance with the recommendations of the Surgeon General's committee, under whose direction the investigation into the hazards from tetraethyl lead gasoline was conducted. They are proposed for adoption by the several States in order to secure uniformity of control and were the subject of consideration at the meeting of the State and Territorial health authorities with the Surgeon General on May 25, 1926. These regulations are based upon present conditions and knowledge and it is appreciated that changes may be advisable from time to time.

By the term "tetraethyl lead" is meant the chemical substance $Pb(C_2H_5)_4$ of a commercial grade of purity or higher. Ethyl fluid is the concentrated commercial fluid containing tetraethyl lead and other ingredients, which is to be mixed with gasoline to make ethyl gasoline. The manufacture of ethyl fluid consists in adding these other ingredients to tetraethyl lead and is called "blending." The process of adding the ethyl fluid to gasoline to form ethyl gasoline is called "mixing." In the term "ethyl gasoline" as herein used are included all other motor fluids containing tetraethyl lead.

I. Proposed regulations for the manufacture of tetraethyl lead and the blending of the latter to make ethyl fluid.

II. Proposed regulations for mixing.

III. Proposed regulations for distribution of ethyl gasoline.

IV. Proposed regulations for automobile garages, repair shops, service stations, and filling stations.

Proposed Regulations for the Manufacture of Tetraethyl Lead and the Blending of the Latter to Make Ethyl Fluid

1. No person shall be employed without adequate instructions as to the nature of the hazard and the precautions to be taken.

2. Each worker shall have a periodical physical examination, which shall consist of such physical and other tests as are indicative of the absorption of tetraethyl lead and shall include, as a minimum, the following items:

(*a*) Examination of blood for stippling by carefully trained workers, using positive and negative controls, without knowledge of the source of the slides; this examination shall be once a week for the first three weeks and bimonthly thereafter.

(*b*) Semimonthly contact with plant physician for informal statement as to general health.

(*c*) Bimonthly weight, stripped.

(*d*) Bimonthly systolic and diastolic blood pressure estimation while sitting.

(*e*) Bimonthly hemoglobin estimation by Dare's hemoglobinometer.

Exact records of these examinations shall be kept, and persons showing gradually increasing amounts of stippling, sudden development of stippling, or other marked deviation from normal shall be promptly excluded from tetraethyl lead work, irrespective of whether or not such finding may be indicative of lead poisoning. All parts of the plants where lead in any form is used shall be subject to sanitary measures to prevent collection and dissemination of lead dust.

4. Separate ventilation systems shall be provided for the manufacturing apparatus and for the air of the rooms, the outlets of the latter being located near the floor of each room and all external inlets and outlets being so situated as to avoid dustiness and appreciable contamination of the air around the plant.

5. Daily inspection shall cover efficiency of ventilating systems, all joints, valves, and gaskets of manufacturing apparatus, and adequacy of pressure-hose respirators.

6. All containers of ethyl fluid or tetraethyl lead shall be labeled as to exact content and danger and shall conform to the regulations of the Interstate Commerce Commission. These containers shall be carefully tested for leaks and shall bear a plainly legible label stating that they are to be closed tight immediately when emptied, without cleansing, and sent back to the plant.

7. Kerosene or other material used for cleansing the used containers of ethyl fluid or tetraethyl lead shall be placed in the containers

by means of a closed system with air vents to outside air and with adequate ventilation.

8. The filling shall be performed by means of a closed system with air vent from the container to the outside air, and with adequate ventilation.

9. A dye shall be added to ethyl fluid in sufficient amount to give staining qualities to the ethyl gasoline to deter individuals from using it for cleansing or other similar purposes.

10. Reports shall be made monthly to the appropriate officer of the State concerned covering the following points:

Number of workers employed at beginning of month.
Number of workers employed at close of month.
Number of new workers.
Number of workers separated from tetraethyl lead work on account of results of examinations.
Number of definite cases of poisoning.
Condition of cases of poisoning previously reported so far as known.

Proposed Regulations for Mixing

1. The maximum content of tetraethyl lead in commercial ethyl gasoline shall be in the proportion of 1:1,260 by volume for commercial tetraethyl lead, or 1:1,300 for $Pb(C_2H_5)_4$ C. P.

2. Mixing ethyl fluid with gasoline except for certain specific requirements such as research, military and naval use, and air-mail service shall be done only at the main distribution centers and in not less than tank-car lots. Adequate provision shall be made at each such center for thorough mechanical distribution of the ethyl fluid throughout the gasoline, and the efficiency of such distribution shall be controlled by the analysis of samples.

3. The locations of these centers and the names of persons engaged in mixing shall be reported to the State department of health of the State of employment.

4. As few persons at each center as practicable shall be employed for this work.

5. No person shall be engaged for mixing until adequately instructed as to the mechanics of mixing, the dangers, and the precautions to be taken.

6. The distributor of ethyl fluid shall provide a special corps of adequately trained instructors and service men.

7. All mixing shall be done with the maximum ventilation practicable under weather conditions existing at the time.

8. Operation of the pumps shall be instantly stopped at the appearance of a leak or other defect, and no attempt shall be made to repair or disconnect the system until a qualified man takes personal charge of it.

9. Floors of all places where any possibility of spilling is present are to be provided with drains and proper facilities for making possible a complete flushing out of all spilled fluid, or in their absence provision shall be made for chemically neutralizing any spillage as it occurs.

10. No bulk mixing station shall be dismantled or disconnected for repairs except by a qualified man.

11. Kerosene or other efficient means of preventing skin absorption of tetraethyl lead and washing facilities shall always be conveniently available.

12. The rules and instructions affecting the employees shall be posted in a conspicuous place where the ethyl fluid is being handled.

13. The distributor of ethyl fluid shall, with the advice of the United States Public Health Service, select a representative group of at least 40 men exposed to the hazard of mixing, representing the entire area of distribution. This group shall serve as an index of the hazard of mixing. Monthly for the first three months and every

four months thereafter this group of employees shall have an examination, which shall consist of:

(a) Examination of blood for stippling, by carefully trained workers, using positive and negative controls, without knowledge of the source of the slides.

(b) Examination of fecal samples of lead.

(c) Report as to general state of health.

(d) Weight, stripped.

(e) Blood-pressure estimation, diastolic and systolic, when sitting.

(f) Hemoglobin estimation by Dare instrument.

Exact records of these examinations shall be kept.

14. The results of the examinations shall be reported promptly to the Surgeon General of the Public Health Service.

1862°—26†—9

Proposed Regulations for Distribution of Ethyl Gasoline

1. Each filling station shall have prominently displayed at the pump, or in other conspicuous place, the following warning or one of similar effectiveness: "Ethyl gasoline containing tetraethyl lead, to be used as motor fuel only, and not for cleaning or any other purpose."

2. Suitable leaflets shall be available at all filling stations when ethyl gasoline is sold, for distribution on request. These leaflets shall describe the possible dangers and precautions to be taken in the use of ethyl gasoline.

3. Containers of ethyl gasoline sold to the general public shall be labeled: "Ethyl gasoline containing tetraethyl lead. To be used for motor fuel only, and not for cleaning or any other purpose."

Proposed Regulations for Automobile Garages, Repair Shops, Service Stations and Filling Stations

1. Automobile garages or repair shops holding more than five cars and all inclosed public-service stations and inclosed filling stations for automobiles should be registered with the local health department.

2. In addition to doors and to window ventilation in summer, automobile garages, repair shops, inclosed service stations, and inclosed filling stations should have permanently operative ventilation at least equivalent to that given by an opening or openings at ceiling level free to the outside air, but protected from down drafts, with cross-section of 0.2 per cent of the floor space available for cars, together with an opening or openings for inlet near floor level of corresponding effectiveness, both arranged to give positive dilution of exhaust gases as generated. This is to be taken as a minimum, special conditions requiring greater permanent ventilation.

3. Automobile garages, repair shops, inclosed service stations, and inclosed filling stations should be kept reasonably clean and free from dust by means of flushing out and moist sweeping or vacuum cleaning.

4. Automobile garages, repair shops, service stations, and filling stations should keep conspicuously posted a copy of these regulations with the following statements in large type:

AUTOMOBILE EXHAUST GAS IS DANGEROUS. MOTORS SHOULD NOT RUN LONGER THAN 30 SECONDS UNLESS THE CAR IS IN MOTION OR THE EXHAUST IS DIRECTLY CONNECTED TO THE OUTSIDE AIR. LIQUIDS SOLD AS MOTOR FUEL, EXCEPT ORDINARY GASOLINE, SHOULD BE USED ONLY AS MOTOR FUEL, AND NOT FOR CLEANING OR OTHER PURPOSES. THE FUMES FROM THE EVAPORATION OF EVEN ORDINARY GASOLINE MAY BE INJURIOUS.

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EXHIBIT 14-B

TREASURY DEPARTMENT
UNITED STATES PUBLIC HEALTH SERVICE
HUGH S. CUMMING, SURGEON GENERAL

CHANGES IN THE REGULATIONS PROPOSED FOR TETRAETHYL LEAD GASOLINE

REPRINT No. 1260
FROM THE
PUBLIC HEALTH REPORTS
NOVEMBER 30, 1928
(Pages 3147-3149)

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON
1929

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CHANGES IN THE REGULATIONS PROPOSED FOR TETRAETHYL LEAD GASOLINE[1]

In 1926 there were published, as part of Public Health Bulletin No. 163, which contained the report of the committee on tetraethyl lead gasoline, four sets of regulations which had been formulated in accordance with the committee's recommendations. These were proposed for adoption by the several States in order to secure uniformity of control, and were the subject of consideration at the meeting of the State and Territorial health authorities with the Surgeon General on May 25, 1926. The regulations were in four series, as follows:

I. Proposed regulations for the manufacture of tetraethyl lead and the blending of the latter to make ethyl fluid.
II. Proposed regulations for mixing.
III. Proposed regulations for distribution of ethyl gasoline.
IV. Proposed regulations for automobile garages, repair shops, service stations, and filling stations.

It was stated in the above-mentioned bulletin that the regulations thus published were based on the conditions and knowledge then existent, and that changes might be advisable from time to time.

The results of the past two and one-half years have fully justified the findings of the committee. In regard, however, to that regulation in Series III which has to do with warning signs on the pumps, it has come to be felt that the latitude allowed in the form, wording, and position of the sign has left much to be desired in uniformity and effectiveness. Moreover, the question has been reconsidered as to whether the word "lead" or the word "ethyl" should be stressed. It was felt at the time when the original regulations were formulated, since there had been much discussion in the press about ethyl gasoline and its possible danger, that the warning would be more effective if all the gasoline containing tetraethyl lead were labeled "ethyl." Much of that public discussion has passed, and it is now believed that emphasis should rather be on the fact that the gasoline contains lead. Developments since the committee's report have strengthened the opinion that, so far as the gasoline is concerned, the hazard, if any, is merely that of lead.

In view of these two considerations, the Surgeon General, after obtaining the advice of the members of the original committee—Dr. William H. Howell, chairman, Dr. A. J. Chesley, Dr. David L. Edsall, Dr. Reid Hunt, Dr. Walter S. Leathers, Prof. Julius Stieglitz, and Prof. Charles-Edward Amory Winslow—has proposed to the various State health authorities the following set of regulations to take the place of Series III dealing with the distribution of ethyl gasoline.

[1] Reprint from the Public Health Reports, vol. 43, No. 48, Nov. 30, 1928, pp. 3147-3149.

1. Each filling station shall keep prominently displayed on each pump which delivers motor fuel containing tetraethyl lead, a sign or signs reading as follows, in prominent heavy gothic capital letters, black on white background:

CONTAINS
LEAD
(Tetraethyl) and
Is to be Used as
Motor fuel only
Not for cleaning
or any other use
Avoid Spilling

The printed matter on the sign, not counting the enclosing border, shall measure approximately 6½ inches wide by 7½ inches high. The first line (Contains) shall be in letters ⅜ of an inch high, the second (Lead) in letters 1 inch high, and the remainder in letters ¼ of an inch high. All words of the sign shall be kept clear and prominent, the entire sign to be within the limits of 5 feet and 4 feet above the ground level. Such a sign shall be maintained on the face of each side of the pump at which delivery could be made.

2. Suitable leaflets shall be available for distribution on request at all filling stations where ethyl gasoline is sold. These leaflets shall describe the possible dangers and precautions to be taken in the use of ethyl gasoline.

3. Containers of ethyl gasoline sold to consumers shall bear the following label in such a position as to be plainly legible when the container is opened:

CONTAINS
LEAD
(Tetraethyl) and
Is to be Used as
Motor fuel only
Not for cleaning
or any other use
Avoid Spilling

Though the term "ethyl gasoline" is used in paragraphs 2 and 3 of the above proposed regulations as well as in Series II, which concerns the mixing of ethyl fluid, it is understood that with the use of these new signs gasoline distributors will be relieved from the necessity of using the word "ethyl" in connection with their product, since in the term "ethyl gasoline" as used in these regulations are included all other motor fuels containing tetraethyl lead. On account of the position specified, a considerable interval of time and in some cases structural alterations in the pumps will be required before the new signs can be expected to be installed at all filling stations which are already equipped with old signs. It is believed that these new signs, expressing in as few and as quickly read words as possible the elementary precautions considered advisable, having a uniform lettering, and placed so that they may easily be read from the driver's seat of an automobile, will be more satisfactory than any specification as to the name of the gasoline, and will form an adequate protection to the motorist against this particular hazard.

EXHIBIT 14-C

CONTAINS
LEAD
(TETRAETHYL) AND
IS TO BE USED AS
MOTOR FUEL ONLY,
NOT FOR CLEANING
OR ANY OTHER USE.
AVOID SPILLING.

EXHIBIT 14-D

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EXHIBIT 17-A

ETHYL GASOLINE CORPORATION

Jobbers' Information Report

DIVISION HEADQUARTERS DATE

Name _____

Address _____
Street Town State

Has jobber applied for Ethyl License Agreement? _____ (Yes No) Approved _____ (Yes No) Brand _____

Has jobber applied for "Q" License Agreement? _____ (Yes No) Approved _____ (Yes No) Brand _____

Jobber now applying for _____ (Price) Ethyl License Agreement _____ (Brand) "Q" License Agreement

Third grade supplied by _____ Brand _____ { Tank Car / Tank Wagon }

Regular gasoline supplied by _____ Brand _____ { Tank Car / Suppliers T.W. / Jobbers T.W. }

Premium gasoline supplied by _____ Brand _____ { Tank Car / Tank Wagon }

Ethyl gasoline supplied by _____ Brand _____ { Tank Car / Comp. Car / Suppliers T.W. / Jobbers T.W. }

Jobber could obtain _____ (Brand) Ethyl Gasoline from _____ Mile

Gallonage for one year preceding investigation _____
Ethyl Regular Premium Third

How long has jobber been in gasoline business (approximate)? _____

Bulk plants _____ (Number) Located at _____

Company owned stations _____ (Number) General appearance _____

Ethyl dealers _____ (Number) Others _____ (Number) General Character _____

Condition of Ethyl pump markings _____ (Good Poor) "Q" pump markings _____ (Good Poor)

Is jobber contracted for Ethyl Gasoline requirements? _____ (Yes No) "Q" Gasoline _____ (Yes No)

Present percentage Ethyl sales to total sales _____

Have Jobbers' employees full knowledge of Ethyl Gasoline? _____

Would Ethyl demonstration aid jobber and employees? _____

Address _____
Street Town State

Has jobber applied for Ethyl License Agreement? _____ (Yes No) Approved _____ (Yes No) Brand _____

Has jobber applied for "Q" License Agreement? _____ (Yes No) Approved _____ (Yes No) Brand _____

Jobber now applying for _____ (Pr.) Ethyl License Agreement _____ (Brand) "Q" License Agreement.

Third grade supplied by _____ Brand _____ { Tank Car / Tank Wagon

Regular gasoline supplied by _____ Brand _____ { Tank Car / Suppliers T.W. / Jobbers T.W.

Premium gasoline supplied by _____ Brand _____ { Tank Car / Tank Wagon

Ethyl gasoline supplied by _____ Brand _____ { Tank Car / Comp. Car / Suppliers T.W. / Jobbers T.W.

Jobber could obtain _____ (Brand) Ethyl Gasoline from _____ Mile

Gallonage for one year preceding investigation _____
Ethyl Regular Premium Third

How long has jobber been in gasoline business (approximate)? _____

Bulk plants _____ (Number) Located at _____

Company owned stations _____ (Number) General appearance _____

Ethyl dealers _____ (Number) Others _____ (Number) General Character _____

Condition of Ethyl pump markings _____ (Good Poor) "Q" pump markings _____ (Good Poor)

Is jobber contracted for Ethyl Gasoline requirements? _____ (Yes No) "Q" Gasoline _____ (Yes No)

Present percentage Ethyl sales to total sales _____

Have Jobbers' employees full knowledge of Ethyl Gasoline? _____

Would Ethyl demonstration aid jobber and employees? _____

Does jobber push sale of Ethyl Gasoline? _____

Reputation in Trade _____ Business ethics _____
(Good) (Questionable) (Unethical) (Date)

Jobber visited last on _____ (Date) Reported last on _____ (Date)

Remarks (Over)

Signed _____

Form 226-L. 34497-1094-1-34 "Printed in U.S.A."

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ETHYL GASOLINE CORPORATION

Jobbers' Information Report

.....DIVISION.....HEADQUARTERS DATE.....

Name.....

Address.....Street Town.....State.....

Has jobber applied for Ethyl License Agreement?.....(Yes No) Approved.....(Yes No) Brand.....

Has jobber applied for "Q" License Agreement?.....(Yes No) Approved.....(Yes No) Brand.....

Jobber now applying for.....(Brand) Ethyl License Agreement.....(Brand) "Q" License Agreement

Ethyl Gasoline supplied by.....Brand..... { Tank Car / Comp. Car / Suppliers T. W. / Jobbers T. W.

Leaded regular gasoline supplied by.....Brand..... { Tank Car / Suppliers T. W. / Jobbers T. W.

Other premium gasoline supplied by.....Brand..... { Tank Car / Tank Wagon

Unleaded regular gasoline supplied by.....Brand..... { Tank Car / Tank Wagon

Third grade supplied by.....Brand..... { Tank Car / Tank Wagon

Jobber could obtain.....(Brand applied for) Ethyl Gasoline from.....Mile

Gallonage for one year preceding investigation.....
(Ethyl / Leaded Reg. / Other Premium / Unleaded Reg. / Third)

Yearly percentage each grade to total sales.....
(Ethyl / Leaded Reg. / Other Premium / Unleaded Reg. / Third)

Present percentage each grade to total sales.....
(Ethyl / Leaded Reg. / Other Premium / Unleaded Reg. / Third)

How long has jobber been in gasoline business (Approximately)?.....

Has jobber previously operated under other name?.....Name.....

Bulk plants.....(Number) Located at.....Tankage.....(Total number & capacity) .....(Number used for leaded gasolines)

Territory.....(Counties)

Company owned stations.....(Number) Appearance.....Ethyl dealers.....(Number) Others.....(Number) Character.....

Condition of Ethyl pump markings.....(Good / Poor) "Q" pump markings.....(Good / Poor)

Has Ethyl demonstration been arranged for jobber and employees?.....

Does jobber push sale of Ethyl Gasoline?.....Leaded Reg?.....Third?.....Other?.....

Jobber visited last on.....(Date) Reported last on.....(Date)

Field Representative's Remarks on Reverse Side Signed.....

Has jobber applied for "Q" License Agreement?..... (Yes / No) Approved..... (Yes / No) Brand.....

Jobber now applying for..... (Brand) Ethyl License Agreement..... (Brand) "Q" License Agreement

Ethyl Gasoline supplied by..... Brand..... { Tank Car / Comp: Car / Suppliers T. W. / Jobbers T. W.

Leaded regular gasoline supplied by..... Brand..... { Tank Car / Suppliers T. W. / Jobbers T. W.

Other premium gasoline supplied by..... Brand..... { Tank Car / Tank Wagon

Unleaded regular gasoline supplied by..... Brand..... { Tank Car / Tank Wagon

Third grade supplied by..... Brand..... { Tank Car / Tank Wagon

Jobber could obtain..... (Brand applied for) Ethyl Gasoline from..... Mile

Gallonage for one year preceding investigation.....

Ethyl | Leaded Reg. | Other Premium | Unleaded Reg. | Third

Yearly percentage each grade to total sales.....

Ethyl | Leaded Reg. | Other Premium | Unleaded Reg. | Third

Present percentage each grade to total sales.....

Ethyl | Leaded Reg. | Other Premium | Unleaded Reg. | Third

How long has jobber been in gasoline business (Approximately)?.....

Has jobber previously operated under other name?..... Name.....

Bulk plants..... (Number) Located at..... Tankage..... (Total number & capacity) ..... (Number used for leaded gasolines)

Territory..... (Counties)

Company owned stations..... (Number) Appearance..... Ethyl dealers..... (Number) Others..... (Number) Character.....

Condition of Ethyl pump markings..... (Good / Poor) "Q" pump markings..... (Good / Poor)

Has Ethyl demonstration been arranged for jobber and employees?.....

Does jobber push sale of Ethyl Gasoline?..... Leaded Reg?..... Third?..... Other?.....

Jobber visited last on..... (Date) Reported last on..... (Date)

Field Representative's Remarks on Reverse Side Signed..... (Field Representative)

Division Manager's Remarks

.....

.....

.....

L. 31606 Form 226 5M 1-38 "Printed in U. S. A."

EXHIBIT 17-C

FIELD REPRESENTATIVE MANUAL

Ethyl Gasoline Corporation
Chrysler Building
New York City

FIELD REPRESENTATIVE MANUAL

Ethyl Gasoline Corporation
Chrysler Building
New York City

HOW TO MAKE A SERVICE STATION SURVEY

SERVICE STATION OBSERVATION

HOW TO MAKE AN AUTOMOBILE AGENCY CONTACT

SALES PROMOTION MEETINGS

JOBBER INVESTIGATION

ROUTINE TO BE FOLLOWED IN THE
COLLECTION AND IDENTIFICATION OF SAMPLES

HOW TO MAKE A SERVICE STATION SURVEY

PURPOSE

1. To collect information on how Ethyl Gasoline is marketed through their service stations by each of our customers.

2. To give the service station operator facts which will help him in converting customers to Ethyl Gasoline.

PROCEDURE

Drive in to the service station as an ordinary motorist. If the pumps are so located that it is possible, stop midway between the Ethyl and the non-premium pump. If the pumps are of the dual type, indicate by your actions you are undecided as to which gasoline you wish to buy. The operator will most likely show his attitude towards selling Ethyl. In your conversation you can determine his knowledge of Ethyl and whether he is trying to sell it.

From the time that you enter the drive of the service station be on the alert for the appearance of the station and whether this particular station is giving the proper service to its customers. The question of service is comparative. In certain sections of the country they go to extremes in dusting off the car, wiping windshields, and other helps. We must judge service, however, on the procedure generally employed in the particular community.

After you have decided to purchase Ethyl, introduce yourself and give the operator information on Ethyl Gasoline and how to sell it. The particular information that you are to give to an operator depends upon his personality and mentality. You will have to judge the man and give him information which he can retain. Do not talk over his head.

You can probably secure his interest by telling of some late events in which Ethyl was used, such as the Army Air Corps maneuvers, the Post-Gatty flight, or any other records which have been in the newspapers within the last few days. After you have secured his interest you can tell him of the increased performance with Ethyl in any car, the adoption of high compression heads by Ford, the statement of Packard in their late instruction book and other things that will suit his particular personality. If he has a car of his own and does not use Ethyl, get him to try it. Possibly the spark on his car could be advanced to give better performance. If so, assist him in making the change. Call to his attention automobile agencies and owners who use Ethyl. By all means go over the Primer with him. If his company has not furnished him with a booklet on their Ethyl Gasoline, give him one from your own stock.

If he has any statements on valve burning, spark plugs or other

PROCEDURE

Drive in to the service station as an ordinary motorist. If the pumps are so located that it is possible, stop midway between the Ethyl and the non-premium pump. If the pumps are of the dual type, indicate by your actions you are undecided as to which gasoline you wish to buy. The operator will most likely show his attitude towards selling Ethyl. In your conversation you can determine his knowledge of Ethyl and whether he is trying to sell it.

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If he has any statements on valve burning, spark plugs or other

troubles, give these particular attention. Secure the names of the individuals making the complaint. Tell him you'll see the man and do so. After you have investigated the matter, go back to see the operator and advise him of your findings.

Call to his attention that his company wishes to sell Ethyl Gasoline and it will be to his advantage to convert as many customers to his brand of Ethyl as possible. The Ethyl user is a quality buyer and will stay with it rather than go to other stations. The quality buyer will have his car greased and his oil changed at regular intervals.

Make a friend of the operator and show him by your actions that you are trying to assist him. Some of our men have reported that certain information we desire has created an antagonistic attitude as they think we are snooping or delving into affairs which do not concern us. This is a sad reflection on any employer of the Ethyl Gasoline Corporation. The trouble is with our man. It definitely shows that he has not conducted himself in a diplomatic manner. There are many things connected with our business which have to be handled more diplomatically than a service station survey. It is up to you to use methods which will produce results for us and assist the service station operator in increasing his knowledge of his product and his ability to sell one of them which means more money to his company.

REPORTS

The report forms should be self-explanatory and we need all of the information requested. Some of the information, such as, station appearance and service offered, is the opinion of the man making the report. We desire it this way and do not wish to lay down arbitrary rules covering each heading. You are a typical motorist and each of you have distinct ideas on what should be done. This same is true of the American automobile public. As for the station appearance, this should be judged on the basis of similar stations in the same locality. Some service stations in certain sections of this country are very elaborate. It is not fair to compare stations in other parts of the country with them.

The filling out of report forms is very important. If it is not filled out properly, it is of no value to us. Care must be excercised. Our statistician cannot possibly know what you mean by a given statement unless it is absolutely clear. He must use the information as it is put down.

Some of our customers have objected rather strenuously to our securing the percentage of Ethyl Gasoline sold at their stations. We have advised that no percentage figures are to be requested from the service station operators of certain companies. The Division Managers probably have issued instructions on certain other companies. Where there is a definite objection to our requesting such information, we must not do it. As for the exact percentage figure, I do not believe that it is of any great importance. We certainly should not request to see the figures on the station. We can get an excellent idea of the service station operator's attitude, however, from his answer to our question. We should casually ask how Ethyl is going and the service station operator will generally reply "We sell as much Ethyl Gasoline as white gasoline", while he may not be selling anywhere near fifty per cent. This operator is trying to create the impression that it is a popular motor fuel. If on the other hand he states "We don't sell ... [illegible]

tion we desire has created an antagonistic attitude as they think we are snooping or delving into affairs which do not concern us. This is a sad reflection on any employer of the Ethyl Gasoline Corporation. The trouble is with our man. It definitely shows that he has not conducted himself in a diplomatic manner. There are many things connected with our business which have to be handled more diplomatically than a service station survey. It is up to you to use methods which will produce results for us and assist the service station operator in increasing his knowledge of his product and his ability to sell one of them which means more money to his company.

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general statements are better for our purpose than the exact percentage.

The service station survey has been in use for six months. Most of our customers have appreciated the work we are trying to do. They are not equipped to secure such information through their own organization although the information is of such value that some of them are seriously considering it. Their officials have laid down certain rules for their service station operators but have very little idea on how well they are being carried out. They realize a large percentage of their sales profits and good will come from the attitude of the service station personnel. Where you find conditions existing which are absolutely contrary to the interest of the oil industry, call it to the attention of the service station supervisor or district manager.

We do not want any reports on dealers' stations except where it is absolutely impossible to secure five reports on company owned operated or leased stations. However you will probably have some time which can be devoted to educational work with dealers. Their sales are as important to us as company owned stations, but there is nothing we can do if they do not push Ethyl Gasoline. We must endeavor to give them information on Ethyl whenever possible.

SERVICE STATION OBSERVATION

PURPOSE

1. To secure informatio which will be of assistance to us in laying out our advertising campaign and sales promotion work.

2. To give our field staff and the New York office first hand information on the problems confronting the service station operator at representative stations.

3. To give information to the service station operator which will assist him to increase his sales of Ethyl Gasoline.

SELECTING A SERVICE STATION

We desire to secure information from a relatively small number of service stations in which it will be possible for our men to act as observers over a period of time which will be representative of the average conditions in service stations over the country as a whole. In order to do this it will be necessary for each field representative to give considerable thought to his selection of the service station in which he works each month. The station should have as large a gallonage as possible. It should be one that has both transient and local trade. It should be in an average community, not either in a rich or poor section and not in a locality catering principally to trucks.

Each field representative should know local conditions and should be informed on the companies in his territory which will give him the most and best information. From these facts it should be decided in what company's station the observation for a current month shall be made. After selecting the company the matter should be taken up with the District Manager of the oil company to secure his approval. With the District Manager and the Service Station Supervisor, the exact station should be selected.

Have the Service Station Supervisor accompany you to the station and interduce you to the operator. This should be done the day before the observations are to take place. You and the Supervisor go over the proposed work with the operator very thoroughly in order that he may know what you expect to accomplish. The operator can be of great assistance in securing the desired information and enable you to secure maximum value from the work. It is essential that you make friends with the operator or operators. By so doing you can secure information that otherwise would be impossible. They can ask questions and secure the correct answer.

In your first contact with the Service Station Operator determine the hours when most business is done and be sure that you are there during that time. The station may have two or possibly three peaks during the day

or evening. All peaks must be covered.

Before reporting to the station for observations make out a work sheet for tabulating the information you desire in making out your report. Go over the report very thoroughly before you attempt to make out the work sheet. Tabulate the information which will be required. Arrange the work sheet so that you can not miss any information which you may need in making out the report. This sheet can be arranged so that little time will be required in tabulating.

Do not be late in reporting to the station. If it has been decided to work from the time the station is opened in the morning, be there at that time.

OBSERVATIONS

It is understood that you shall act only as an Observer at Service Stations in all states except those in which we are qualified to do business. You might subject us to a heavy tax in certain states if you were to operate the pump or be instrumental in making a particular sale. You are not to put on a uniform or assist the operator in his routine duties. You are not to approach any customer or talk to him on Ethyl gasoline until he has told the operator what kind of gasoline he wishes to purchase. After the order has been placed for the particular fill of gasoline you can engage the party in conversation and secure the desired information. In many instances it will only be necessary for you to listen to the conversation of the operator. If any questions are asked for which the operator needs assistance you can help him.

During the time in which no cars are in the station you can give the operators information which will assist them in converting the users of non-premium gasoline to Ethyl. Suggestions can be tried on various classes of cars and owners. If you are on a friendly basis with the operator he will be pleased to try your suggestions. If any suggestions are outstanding in their effectiveness, please give us a full report on what was done and said.

Your contact with the Service Station for a day each month should enable you to secure information which will be of great value to you and to us on the problems confronting the service station operator who desires to increase the sale of Ethyl Gasoline. You can learn a great deal from the operator. Do not hesitate to ask questions. If the station is outstanding in its percentage of Ethyl, give us the operator's complete sales story from his approach to the customer to his bidding the customer good-bye. This should be given in the exact language of the operator. We do not have any information on the sales story as given by the men who are actually selling Ethyl at the pump. We know some operators are very effective in selling Ethyl. We want to put their words in the mouth of every operator. It is up to you to give us this information.

In any state where we are qualified to do business you can put on the uniform and conduct yourself exactly as a regular operator.

REPORTS

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REPORTS

We are basing to some extent, our advertising appropriation, what we shall say in advertising to convert more users to Ethyl and Sales

Promotion, on about one thousand reports of Service Station observations per year. It is needless to say that all reports to be of value must be accurate, some however, have come in to this office which were useless. Study must be given to them and be sure that any statement is authentic before placing it on the report form.

In the main the report form is self explanatory, but some confusion may arise on the headings covered in the following paragraphs.

For the "Gallons Sales Gasoline Today" we desire the total figures for the day which would include the time you were absent from the station. In other words the complete record of sales for that date.

"No. cars purchasing Ethyl by price class" and "No. cars purchasing Non-Premium by price class" give the actual number making purchases while you were observing. Do not take any figures under this heading from the operator.

"% cars purchasing Ethyl by price class" apply only to the class of cars and must be calculated correctly. The following is an example:

No. cars purchasing Ethyl by price class:			Low	8	Medium 10	High	3
No. cars	" Non-Premium	"	"	Low 12	Medium 10	High	1
% cars	" Ethyl	"	"	Low 40	Medium 50	High	75

"Avg. Gallons Purchased" should include only the record for the time you are in the station.

"Suggestions to Increase Sales at this Station". This should always be filled out. Certainly you can see something which would warrant comment.

Under "Remarks" give us any ideas you secure from the station operator or from your observations. Use the entire reverse side of the sheet if necessary.

HOW TO MAKE AN AUTOMOBILE AGENCY CONTACT

Outline

PURPOSE

1. To have automobile dealers (Sales and Service) recommend Ethyl Gasoline to all of their owners.

2. To have all agencies or other distributing units know the true facts on Ethyl Gasoline, what it will do and what it will not do, such as harm the engine or other parts of the car.

3. To secure authentic information on the attitude of various agencies on our product.

4. To secure suggestions and constructive criticism of our general business and ideas on how we could further the sale of Ethyl Gasoline.

PROCEDURE

A. Sales Department

1. Obtain name of Owner or Sales Manager before making a call.

2. Obtain some information on the characteristics of the gentlemen and his attitude toward Ethyl Gasoline before making call.

3. If unfavorable, correct attitude by showing him logic of using a fuel that will give the owners of his cars better satisfaction.

4. Stress the following:

   a. Better performance with Ethyl.
   b. Satisfaction of owner.
   c. Smoother engine operation with less cost of repairs over the life of the car.
   d. Standardization and quality of Ethyl Gasoline.
   e. Ethyl is a recognized product proven by the automobile industry and adopted by the oil industry.
   f. Distribution.
   g. Ethyl Gasoline has been used in racing and other events.

5. If very favorable and friendly, ask that the salesmen be instructed to recommend the use of Ethyl Gasoline.

6. Leave Primers.

7. If unfavorable, cultivate him by outside interests and his hobbies.

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B. Service Department

1. Have owner or Sales Manager introduce you to Service Manager.

2. Stress the following:

   a. More power.
   b. Better performance.
   c. A cooler running motor.
   d. Ethyl Gasoline does not slow up combustion.
   e. Will eliminate owners calling on the Service Department for minor adjustments for which no charge could be made.
   f. If unfavorable, call to his attention other Service Managers in his town or Service Managers of Agencies handling his make of car which recommend Ethyl.
   g. If unfavorable, diplomatically call to his attention that it is a reflection on the quality of the material used in his car if it can not use Ethyl as a fuel.

3. Talk with mechanics where possible and give them the same facts on Ethyl.

4. Leave Primers.

This outline will clearly show what we are attempting to do. We will give you a resume of how this can be accomplished.

In your association with the employees of our customers you can pick up information on automobile agencies which will be very valuable to you in your contacts. They will be able to tell you in many instances the attitude of the agency toward Ethyl Gasoline, the names and possibly something of the personalities, characteristics, likes and dislikes of the Owner Sales Manager, Service Manager, and Mechanics. Any such information should be kept in permanent form in a notebook for future reference. In some cases it may be desirable to make your first call on a particular agency with the employee of one of our customers. You will have to be the judge of this procedure.

Data on each make of automobile should be kept in such form that it can be studied prior to a call and referred to during the call if necessary. When making a call on a particular car agency you must have at your finger tips all available information on the car they sell. You have information on different makes of cars which will be supplemented from time to time.

We desire an over-all picture of the attitude of dealers of every automobile manufacturer. We do not want you to devote all of your time to contacting with either Favorable or Unfavorable Agencies. However, if an agency is Unfavorable, you must leave no stone unturned until you have converted them to our way of thinking. In order to do this it may be necessary to cultivate some of the individuals by outside interests or their hobbies. [illegible] they must not be neglected

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Upon entering the establishment ask for the owner or other person you want to interview by name. State your business in a polite diplomatic way. It is the consensus of opinion that the Sales Department or owner should be contacted first. They are interested in performance which sells cars and can outweigh an unfavorable influence of the Service Department. If there is a good reason for it the Service Manager may be contacted first.

In making your approach make it clear that you are not trying to sell a tank wagon load of Ethyl Gasoline but want to give them information which will assist the Agency in furthering their business. The average distributor of cars is not furnished with much information on what is meant by high compression and what its effect on horsepower, economy and performance is, although it is used extensively in advertising and conversation. His idea on fuels is it makes the wheels go and that is about all. He does not understand the difference in gasolines and why his car will operate better on Ethyl. In giving him this information, which vitally affects his business, you are giving him a real service and he will appreciate your call.

If the particular make of car has an optional high compression head, call this to his attention. If he has never installed one of them and made his own tests, secure his cooperation to do so by giving him a demonstration in your own car. There are several optional high compression heads available but they have not been sold due to lack of information on what they will do. If the factory has not given their distributors the information we can assist them in the same way we have done with the Ford B. head.

They may have installed a single H-C head and discarded their use due to improper adjustment of the spark. As you increase compression the spark must be retarded to give maximum performance and power. There are many problems to be considered in high compression but all of them can be overcome if the proper steps are taken. (Refer to Earl Bartholomew's five papers for specific examples.)

Today more than ever before the American automobile owner is demanding better performance and the manufacturers are spending their money to make their car the best performer on the market. The Owner and Salesmen are interested in anything that will give the maximum performance of their car. There is no doubt that Ethyl Gasoline will improve acceleration, hill climbing ability, and other characteristics of the car where maximum power is required.

Some automobile manufacturers still continue to send out their cars with the spark retarded in order to be able to advertise they will operate on any gasoline. Maximum performance can only be secured by a properly adjusted spark. By advancing the spark and using Ethyl Gasoline not only will there be a marked improvement in performance but there will be also an increase in miles per gallon.

Many automobile agencies may state the premium for Ethyl as a reason for not recommending it. When we figure the additional cost in cents or percentage it does look large. That, of course, is not the way to think of it. The average automobile uses 600 gallons of gasoline a year. The additional cost will be only $18.00 per year, $1.50 per month, or about 5¢ per day. There is no accessory which could be purchased for this amount that would produce the increased performance of Ethyl. It is optimally

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would overcome the additional cost.

A new car owner is very proud of the appearance and performance of his car. Irrespective of its cost he does not enjoy seeing an older car leave him at the traffic signal or pass him on a hill. If he uses a gasoline which will prevent such an occurrence he will be better pleased with his purchase.

It is a well known fact that any vibration in a motor will cause undue stress on the bearings, pistons, connecting rods and block. Knock causes these vibrations and its elimination will improve the life of the motor.

Our laboratory has found in their contact with automobile manufacturers that the most interesting phase of our marketing of Ethyl Gasoline is our control over its quality. This should also be interesting to Agencies. You should advise them how this is done. First the base stock for each mix must be tested by us to see if it is a good motor fuel from the distillation, gum content, sulphur content and other characteristics. Then for the amount of lead required to bring it to our standard of anti-knock value. The finished Ethyl Gasoline must be O-K'd by us before it is shipped from the refinery. Our representatives pick up samples from pumps which are sent to our laboratory to determine if there has been any dilution either intentional or unintentional. Some of them may refer to Ethyl Gasoline as "high test" gasoline. Do not let this go unchallenged as they may receive instructions from their home office not to use "high test" gasoline when they have no reference to Ethyl. In such cases explain to them that "high test" gasoline has only one good quality, easy starting, and may have bad qualities such as "gas lock" which would be very objectionable.

Many automobile dealers do not even know today that Ethyl fluid was developed by and for the automobile industry. They all know how much work is done by any automobile company before a new car is put on the market. Ethyl fluid was given the same thorough test over a period of several years. Ethyl Gasoline would never have been sold if it was not beneficial to automobiles or had any detrimental effects.

Before the large oil companies adopted Ethyl fluid for use in their gasoline they saw similar tests and came to the same conclusions.

After all, the public is a "court of last resort" and they have accepted it. This is definitely proven by the increase in sale of Ethyl Gasoline over the last five years.

There will probably continue to be some complaints on Ethyl burning valves, spark plug trouble, etc. Each of these must be thoroughly investigated and brought to a satisfactory conclusion. You have sufficient information to settle a complaint from any reasonable man. If the complaint is unusual and you desire further information, do not hesitate to write the New York office.

Ethyl Gasoline is now distributed by practically all large oil companies and can be secured anywhere in the United States and Canada. The companies selling Ethyl Gasoline represent approximately 85% of the oil industry. One pump in every five is selling a gasoline treated with Ethyl

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In your conversation casually bring in the fact that Ethyl fluid has been and is used in all gasoline where high performance is necessary.

The winners of the Indianapolis Memorial Day Race, Malcolm Campbell, Schneider Cup Race, Gold Cup Race, Army Air Corps, and the Navy use Ethyl. If this is brought in at an appropriate time, it will have a marked influence.

For the Service Manager you must stress that Ethyl Gasoline gives a cooler running motor. Most of them believe more power is only produced by higher temperature. They believe Ethyl Gasoline produces a hotter running motor, and therefore burns spark plugs and valves. Show them there are only so many heat units in a gallon of gasoline. 75 - 80 per cent of this is thrown away through the cooling water, exhaust gases and radiation. Only a small part of the heat content is used as useful power. If Ethyl Gasoline increases the power only 2% there is just that much less heat to be thrown away. That Ethyl Gasoline does give a cooler running motor can be easily proven by inserting a distance thermometer, which reads to single degrees, in the cooling water.

One of the popular fallacies on Ethyl Gasoline is that it slows down combustion. This view is held by many who should know better. Our old illustration of a steam engine governor is about as good as can be used. A steam engine governor does not slow down the revolutions but prevents it from speeding up when the load is lightened. In the same manner Ethyl fluid does not slow down the speed of burn but prevents its truly exploding with the characteristic knock. The fact that Ethyl does not slow down the rate of burn has been proven in several ways. An indicator diagram of an engine where no fuel knock is present shows exactly the same pressure at any point in the cycle whether a good grade of gasoline which does not knock is used, or whether Ethyl fluid is contained in the gasoline. If Ethyl Gasoline slowed down combustion, the pressure would be higher at each point in the power cycle up to the point where the exhaust valve opens. It has also been shown by using a long glass tube and taking a photograph of the burning of a gasoline and air mixture. The length of time required for the flame to burn twenty feet is exactly the same whether the gasoline contains Ethyl fluid or not. The temperature of the exhaust gases, taken at the time the exhaust valve opens, by very accurate means shows that they are slightly cooler if the gasoline contains Ethyl fluid. These facts prove conclusively that Ethyl does not slow down normal combustion. It does, however, prevent the true explosion which is the cause of knock.

If every Service Manager and Mechanic who believes that Ethyl Gasoline burns valves would honestly look for the cause of the burning, our complaints from this would decrease immediately. As a general rule it is perfectly obvious from the operation of the car that the valves are leaking and are burnt. In practically all cases one, two, three or more valves are burnt but not all of them. Suggest to the Service Manager or Mechanic that he check up on the clearances of the valves before starting dissembling. The ones that do not have a proper clearance will be burned and the others will be satisfactory.

When a man purchases a new car he expects it to run like a watch. He has paid his good money and is entitled to satisfaction. If after a few hundred miles of operation he hears a noise which he does not believe should be associated with a sweet running car, he immediately either takes it to the Service Department or begins to blame it on the car. Many owners are not able to differentiate between fuel knock and mechanical noises. If the noise is fuel knock it could be eliminated by the use of Ethyl. This would

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guarantee period is up and the agency attempts to charge for the service, a dissatisfied customer results which may cause a loss of a resale or a sale to friends.

The Service Managers are a distinct class in themselves. They have peculiar likes and dislikes. They can do anything any one else can. Allow the Service Manager and Mechanics to tell you how they overcome their pet service problems. This will promote good will and also give you information which can be used with other Agencies. If they know the Service Manager of a rival Agency gets better results with Ethyl, they will attempt to do the same. Call to their attention all of the men in similar positions who recommend Ethyl. This will convert them as quickly as any other method.

As for comparing the quality of the materials in his automobile with the material used in other cars, this must be done in a most diplomatic manner. There are many men with whom this argument can not be used. You will have to study the personality of your contact very closely before making such a statement. However, it is true.

As for making the contact it should be unnecessary to request you to be diplomatic and not get into an argument which might produce ill feeling This has been done, however. In such cases more harm than good has been done Do not allow anyone to dominate you but do not get into useless arguments. These men have been in the same line of work probably much longer than you have been an employee of this company. They know their subject and it is up to us to enlighten them on ours. Fuel is an important adjunct to the automobile. Without a satisfactory gasoline, the present day automobile could not exist.

REPORTS

In making out the reports it is absolutely essential you give only facts. We believe the forms are self-explanatory. It is necessary for you to weigh all statements in some instances before giving your classifications as "Favorable" or "Unfavorable". If you can not decide on the classification, make it "Unfavorable" and keep after the agency until you are sure they are "Favorable".

There has been some discussion as to a third classification such as neutral or non-commital. We do not believe it necessary as they are either with us or against us. There is, however, a distinct marking. If an Agency uses Ethyl in their demonstrations, recommends it to all owners, and sells it, it should be definitely shown. To classify this Agency mark the report just as you have been doing but in parenthesis, either after or under, place the word "Booster" thus: Favorable (Booster) or Favorable (Booster).

On the report forms the space "Suggestions to increase acceptance of Ethyl Gasoline" in a great many instances is not used. Most men are very willing to tell how other people's business should be run. If any statements on this subject are made, they should be given even though you do not think they have any merit. We are securing some very constructive suggestions and hope to receive more.

Under "Remarks" give any other information which is not covered in the report. If it is necessary to have more space to fully cover the subject

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SALES PROMOTION MEETINGS

It is a well known fact that all people will talk most about the subject on which they have most information. This statement applies more truly to Ethyl gasoline than many other subjects. It has been conclusively proven that those customers of ours who have given their sales personnel information on their brand of Ethyl Gasoline have received the greatest reward in increased sales, and increased profits which result. While we and our customers have devoted time and expense to educational work it is necessary for us to continue our efforts until the oil, automobile industries and public, are each aware of its benefits to each of them.

The field for educational work is really limited only by the population of any country in which Ethyl Gasoline is marketed. In the following we list some of the places where we can secure very definite benefits from meetings:

Our customer employees
Jobber employees
Automobile agency and distributor employees
Truck and bus fleets
Automobile shows
State and County fairs
Noon time clubs
American Legion and similar service clubs
High schools and minor colleges
Major universities (Meetings to be held only by representatives of the Detroit or Yonkers Laboratory.)

There can be no set procedure for arranging meetings. Each field representative should be on the alert to recognize the opportunity to increase the sale of Ethyl Gasoline by holding educational meetings. A large percentage of the people with whom you come in contact have connections through which meetings can be arranged.

ARRANGING FOR MEETINGS

To insure a successful meeting it is necessary that proper groundwork be done in advance. Sufficient publicity must have been given to insure maximum attendance and interest. In case of an oil company the ideal way is for the Sales Manager to notify each of the Division, District or Branch Managers as far in advance as is possible, giving complete information on the purpose of the meeting and what is expected of them. The Division, District or Branch Managers pass the information along to all employees stating definitely that they shall be present and advising them on the part they are to play. Garage employees and others who would be interested should be invited to the meetings by personal contact, telephone, letters or any other appropriate means.

reward in increased sales, and increased profits which result. While we and our customers have devoted time and expense to educational work it is necessary for us to continue our efforts until the oil, automobile industries and public, are each aware of its benefits to each of them.

The field for educational work is really limited only by the population of any country in which Ethyl Gasoline is marketed. In the following we list some of the places where we can secure very definite benefits from meetings:

Our customer employees
Jobber employees
Automobile agency and distributor employees
Truck and bus fleets
Automobile shows
State and County fairs
Noon time clubs
American Legion and similar service clubs
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Major universities (Meetings to be held only by representatives of the Detroit or Yonkers Laboratory.)

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You should visit the man in direct charge of each meeting as far in advance as is convenient. At that time you can go over with him, points to be emphasized and show him it is to his advantage in increasing sales, to have a large attendance. It is quite possible to get ideas from him which will assist you and be also applicable to local conditions.

It is absolutely essential to set up the demonstrator and run it in advance. The demonstrating engine and its accessories must be in perfect working order and in clear view of the entire audience even when you are operating it. There are still those who believe it is a "fake".

Provisions must be made for the entire audience to be comfortably seated. You can not keep the attention of your audience if they are ill-at-ease.

Secure a black board for illustrations.

Have a sufficient quantity of primers for all who desire them.

THE MEETING

Have a very definite time set for the meeting to begin. Start promptly.

Have someone introduce you with proper remarks. If the meeting is for the employees of an oil company have the man in charge of the meeting devote a few minutes to his own company's gasoline stressing why it is the best. You can only talk about Ethyl gasoline as such, without extolling merits of the particular brand. It is up to the company to give their employees information which will sell their particular brand of Ethyl.

You must adapt your talk to the audience. If it is for an oil company give them facts which will convince them that Ethyl has the merits we claim and arguments which will enable them to convert customers to its use. If it is for an automobile organization give facts which they can use. If it is for a noon time club give general information on both the automobile and oil industry as they will not allow any advertising talks.

In advance, make an outline of what you desire to cover in each talk. In any meeting the following should be discussed.

1. History of the automobile industry and why gasoline is used as a fuel.
2. Developments which led up to the discovery of Ethyl fluid.
3. Knock and its elimination.
4. Our control of quality,- distillation,- gum vapor lock and anti-knock value.
5. Demonstration.
6. Usefullness of Ethyl Gasoline.

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5. Demonstration.
6. Usefullness of Ethyl Gasoline.
7. Benefits of increased compression.

8. Trends in the automotive industry toward high compression.

9. Use of Ethyl Gasoline in sport events where maximum quality of a fuel is required.

10. How to increase the sale of Ethyl (For oil companies only).

11. Benefits to be derived from the use of Ethyl Gasoline in present day automobiles.

12. Questions.

You have the information and ability to prepare and make an intellegent sales talk but you should give consideration to the following points to be stressed.

1. Ethyl fluid was developed for and by the automobile industry in the General Motors Research Corporation Laboratories.

2. Ethyl Gasoline is marketed by 100 leading oil refining companies who sell 85% of the gasoline in the United States.

3. More than 20% of all pumps in the U.S. dispense Ethyl Gasoline.

4. Ethyl Gasoline is the recognized anti-knock fuel which made high compressioned, more efficient automobiles possible.

5. Ethyl Gasoline is the only fuel whose quality is also controlled by an organization which is vitally interested equally in the automobile and oil industries. No other such organization exists.

6. Ethyl gasoline is the most extensively advertised fuel in the world. (This for oil companies only.)

7. Get the customer at the Ethyl pump and say "Shall I fill your tank with Ethyl?" (For oil companies ONLY.)

Headings 1 and 2 should not require more than two or three minutes and serve only as an introduction.

The demonstration is still the most effective way of telling our story. You must thoroughly explain the apparatus and what you will do. Tell them it is a special motor designed to show that Ethyl fluid eliminates knock. Add the fluid to some gasoline that they have already seen run in the engine. Eliminate the knock by holding an eye dropper wet with Ethyl fluid in front of the mixing valve. Do not attempt to test gasoline which may be brought to you. The apparatus is a demonstrating engine, not a knock testing engine. If anyone insists that you test gasoline explain in detail the apparatus required. If any of them are not sold on the way the demonstration is made have them come up after the meeting is over and operate the engine themselves.

Watch your audience very carefully. You can tell whether the talk is going over or not. If not, change your approach, bringing in some facts which will interest them.

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Watch your audience very carefully. You can tell whether the talk is going over or not. If not, change your approach, bringing in some facts which will interest them.

Do not take too much time to give your talk. Thirty minutes should be sufficient to tell your story and fifteen minutes for the demonstration. Do not ramble in your talk and speak very plainly in language which can be understood by all those present. Do not use technical terms or high sounding expressions if it is possible to express your thoughts in short concise words. Be Positive, not Negative in all your statements.

Many times there are reporters from local papers present at our meeting. They do not get the facts as we want them presented. Prepare a typewritten talk so that it can be handed to them.

It is necessary for you to hold repeat meetings at which there may be a large percentage of those present who have heard our story before. You must take this into consideration in outlining your talk. "Harnessing the Power of Gasoline" will give you sufficient information to use where you might appear before the same audience many times without the talk becoming boresome. Use new illustrations and facts. The oil and automobile industry is changing. New records established from time to time will assist you. Do not allow yourself to get into a rut on your talks as if you were reciting a memorized paper.

At the conclusion of your talk, open the meeting for questions. In many instances it is desirable to plant questions in order to warm up the meeting. Answer the questions clearly and concisely. Be sure that the party asking the question is satisfied before passing on the next one. Make each one asking a question feel that it is important even though the question may be foolish. If there are any questions asked of a strictly technical character, the answer to which would not be of interest to all of those present, ask that it be deferred until the meeting is over. Do not hesitate to state you do not know an answer to a question if you do not have the information. Make it clear that you will secure the correct answer from the proper source. No one can know everything.

Keep the meeting under your control at all times.

All of the foregoing has been based on formal meetings. There are informal talks that can be of great value if you are at a bulk plant when the tank wagon salesmen are in, a few minutes talk to them will be advantageous. Some automobile agencies have sales meetings every day or at frequent intervals. This is a good opportunity to give them facts. Meetings of any character whether large or small will produce results.

You are expected to follow up the meetings by personal contact with those present. After a meeting, talk with some of those present and find out the points that impressed them. With a service station operator find out how effective the information given was, in increasing sales. By the follow up you can secure pointers to be used in future meetings.

After the meetings give as many of those present as possible, a demonstration in your high compression car. This will show them the effect of high compression and a proper fuel. Many times this has been most effective in selling a large gallonage.

CONCLUSION

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We can only outline to you in a very general way what is to be

done on meetings. You must use your own initiative and good judgment. The meetings are most important and your value to the company must be Measured, to a large degree, in the number of meetings you arrange, and their effectiveness in increasing Ethyl sales.

JOBBER INVESTIGATION

INTRODUCTION

The two types of organizations retailing petroleum products to the motoring public have many points in common as far as their marketing and distributing methods are concerned. However, in the general set-up and manner of receiving supplies they are quite dissimilar.

The first of the two types of organizations, and by far the largest marketer of petroleum products, is the refining company. This organization often referred to as a major company, sells the products refined in their own refineries through their sales department directly to the consuming public by means of company owned service stations and dealers.

The other type of organization, and the one in which this paper is in reference to is the so-called jobber, an independent distributor operating under a name other than the corporate name of the refining company, buying supplies in tank car or barge quantities, storing the product in a bulk plant and retailing it to the public through owned service stations and/or dealers. In some cases the jobber may buy some of the products in tank car quantities, storing them in a bulk plant, and secure the remainder of the supplies in tank wagon from the storage of a nearby jobber or refining company. In a few cases the jobber may act as a pedler, securing all of his requirements in tank wagon from the bulk plant of another company, and distributing it either through service stations or dealers. A jobber may secure his requirements in tank car or larger quantities from a refining company and in many cases market under the brand of that refining company. Other jobbers while buying from the refining company may prefer not to confine their purchases to one company, but purchase through one or more refining companies and market under their own brand name.

HISTORY AND PURPOSE OF LICENSE AGREEMENTS

When Ethyl Gasoline was first placed on the market and made available to the general public there was some question as to whether the sale of this product should be solely to the refining companies or to the refining companies and their jobbers. After much discussion it was finally agreed that jobbers should distribute Ethyl Gasoline but to ensure that the Ethyl Gasoline Corporation would have some control and part in the sale and distribution of this gasoline, jobbers should be licensed in some manner. For this purpose a contract was drawn up which was entitled a "Jobber License Agreement". This License Agreement privileged the jobber to sell and deliver in a specified territory Ethyl Gasoline in quantities less than tank car lots only to users and consumers, or to retain dealers for delivery directly by such dealers to users and consumers, Ethyl Gasoline purchased from a licensed refiner under the brand name of the refining company or their own brand name. It was later found that jobbers distributing Ethyl Gasoline under their own brand name was most unsatisfactory. The jobbers were

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constantly changing their source of supply and identifying the supplying company of Ethyl Gasoline which was found to be below standard was practically impossible. In working to have jobbers mark their pumps correctly, the refining companies were uncooperative due to the fact that they did not know how long they would continue to supply the account and it was therefore not worth their time and expense. Conditions reached such an unsatisfactory state that in order to protect the name and quality of Ethyl Gasoline, the practice of licensing jobbers for the sale of Ethyl Gasoline under their independent brand names was discontinued on January 1, 1929. Later notices of cancellation for all jobber brand License Agreements were sent out, such cancellations to take effect October 1, 1930, so that today all independent distributors marketing Ethyl Gasoline hold a License Agreement covering the sale of this product under the brand name of the refining company from whom they secure their supplies.

At the time the License Agreements were first issued to jobbers, the Ethyl Gasoline Corporation would send to its various refining licensees a supply of License Agreements already executed on the part of the Ethyl Gasoline Corporation. The tank car salesman of the refining company would have a supply of these License Agreements and on the completion of the sale of Ethyl Gasoline would have the jobber execute the License Agreement, in duplicate. One copy of the License Agreement, fully executed, would be left with the distributor for his file, and the other copy forwarded to the Ethyl Gasoline Corporation. Under this procedure we were not aware of a jobber being licensed to market Ethyl Gasoline until the executed copy was received and the jobber in all probability was by that time actively marketing. Later this procedure was amended and the License Agreements were sent out unexecuted on the part of the Ethyl Gasoline Corporation and were not executed until License Agreements were returned to the main office executed on the part of the prospective distributor. On receipt of the License Agreements, both copies were executed by the Ethyl Gasoline Corporation and one copy forwarded to the supplying company to transmit to their customer.

PURPOSE OF INVESTIGATION

This method of executing all License Agreements which were submitted was found to be very unsatisfactory in that all jobbers regardless of their desirability were licensed to market Ethyl Gasoline. To correct this condition a system of investigating all applicants before issuing License Agreements was inaugurated. The reason for the investigation before the issuance of an agreement is to ensure that all marketers of Ethyl Gasoline will be of a high type and will be people who will maintain the quality of Ethyl Gasoline, protect the reputation that the Ethyl Gasoline Corporation have established for their product and will not resort to unethical methods in competing with our other licensed jobbers and refiners.

While gallonage given us by our jobber accounts is a substantial portion of our total gallonage, and is gallonage in every way desirable, still it is not worthwhile at the expense of the reputation of Ethyl Gasoline, or the good-will of our refining licensees. The type of distributor handling Ethyl Gasoline in a community governs very materially the standing of this product and the attitude of our major refining licensees in that community. If the jobber is a reputable business man and an ethical marketer with clean

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unenviable reputation for business dealings and is in every way an undesirable marketer, the standing of Ethyl Gasoline will be lowered and sales will suffer as legitimate marketers will be unable to consistently push the sale of their Ethyl Gasoline.

ROUTINE OF HANDLING LICENSE AGREEMENTS

In order to clarify the handling of License Agreements at the present time, we will follow in detail the course of a License Agreement from its printing to its final disposition. The License Agreement is printed under the direction of the Ethyl Gasoline Corporation and on completion is delivered to the New York office. Here the brand name of the refining company to whom the License Agreement is to be delivered is stamped in the space provided and a bulletin covering the handling of Ethyl Gasoline is attached. A supply of License Agreements, unexecuted, are sent to the refining companies together with an application blank for each two License Agreements. The application blank is in the form of a letter in which the applying jobber gives confidential information as to the extent of his business and makes application for a License Agreement covering the sale of a particualr brand of Ethyl Gasoline. The refining companies in turn supply their tank car salesmen with these forms for use in soliciting of Ethyl Gasoline accounts. After the sales representative has completed the sale, a Jobber License Agreement, in duplicate, and an application blank are given to the jobber for his signature. The completed forms are forwarded by the salesman to the office of the refining company, who in turn forward them to our New York office.

ROUTINE OF INVESTIGATION REQUEST

On receipt of the application and License Agreements by the New York office, the name and address of the jobber is referred to the Division Manager in whose territory the jobber operates, together with the name of the person signing the License Agreement, the brand of white gasoline sold and the brand of Ethyl Gasoline applied for. The Division Manager in turn refers this information to a field representative with the request to conduct an investigation. When the investigation has been completed, and the Jobber Information Report is made out by the field representative, it is forwarded to the Division Manager. The Division Manager, after reading the report, forwards it to the New York office with his recommendation and comments.

HANDLING OF LICENSE AGREEMENTS BY NEW YORK OFFICE

On the Jobber Investigation Report and the information supplied by the Division Manager, the New York office bases their decision as to the issuance of a License Agreement. If the License Agreement is to be issued, both copies are executed, and one copy is returned to the refining company for their transmittal to the jobber. The other fully executed copy is retained for our file. In a case where the License Agreement is not issued, both copies of the License Agreement are returned to the refining company. In all cases the application form is retained by the Ethyl Gasoline Corporation.

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If the License Agreements submitted are from a jobber already licensed to market Ethyl Gasoline, and the submission of the new License Agreements constitutes a change in supplier and brand name only, the same procedure is followed with the exception that the present supplier is requested for information as to their contractual relations with the jobber.

If no contract is in existence, and a favorable report is received, new License Agreements are issued. These License Agreements supersede the former License Agreement and for that reason no formal cancellation of the previous License Agreement is necessary.

In the event an up-to-date report is available when License Agreements are received the investigation is dispensed with and where a jobber has been licensed before, information as to contracts is all that is requested. Some of our refining licensees submit License Agreements in triplicate in order that they may have a copy for their own files. This in no way alters the procedure outlined above, two copies being returned to the refining company.

Jobbers in a few instances will submit License Agreements through one or more refining licensees, before any action has been taken on License Agreements previously submitted, or may submit License Agreements for a different brand of Ethyl Gasoline when former License Agreements have been rejected. In these cases a letter is written directly to the jobber, requesting advice as to the brand of Ethyl Gasoline they would prefer to market before any License Agreement is issued.

Where a jobber discontinues marketing Ethyl Gasoline, or disposes of his business, the License Agreement issued to him is cancelled by letter and the supplying company notified that we no longer list this jobber as holding a valid License Agreement.

Shipments of Ethyl Gasoline by refining companies are not made until the jobber has in his possession an executed License Agreement.

NEED FOR PROMPT INVESTIGATION

It is most important that the investigations requested of the field representatives be taken care of promptly. Every day that a jobber is without Ethyl Gasoline due to the inability of the New York office to issue a License Agreement because of the lack of an investigation report, means gallonage lost that can never be regained. There is also an added worth to early investigations in that our refining licensees are anxious for added gallonage and the prompt handling of License Agreements submitted by them will build additional good-will. In the case of a reinvestigation of a jobber for whom License Agreements have been rejected, the earlier a favorable report can be turned in adds that much gallonage to our yearly total. By no means is it to be understood from this that our standard should be lowered in order to obtain a favorable report.

INVESTIGATION

In making the actual investigation the following procedure should be generally followed

General Survey:

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INVESTIGATION

In making the actual investigation the following procedure should be generally followed

General Survey:

The general survey should cover the background and past and probable operations of the jobber. A field representative should be familiar with the general reputation of the jobber through his contacts in his territory. For further information calls should be made at the offices of refining

licensees and licensed jobbers operating in the same territory as the applying jobber. The requests for information from these sources should be handled as diplomatically as possible, giving as little information as can consistently be done in obtaining the facts desired. It is well not to mention the brand or the supplying company of the Ethyl Gasoline for which License Agreements have been submitted. The information obtained at this time is general reputation of the jobber, reputation in trade, marketing operations, probable gallonage, credit and general standing in the community. If the owner or owners of the company are interested in other lines of business, any information obtained on these businesses and the manner in which they are conducted is pertinent information. In the case of doubtful credit, it is well to call on the bank and learn from them the financial standing of the company and the men interested in it. Where it can conveniently be done, a reading of the Articles of Incorporation of the company give accurate information as to how the business may be conducted. Calls at the offices of oil associations, jobber associations, Regional Code Offices or other organizations of a like nature will often yield information otherwise unobtainable. If the jobber has advertised in local newspapers, a search through the files of the newspaper office will give a good indication of the type of business conducted in the past.

Interview with Jobber:

The representative's call on the jobber is very important and care should be taken by the representative to conduct himself as a gentleman through the entire meeting, regardless of the attitude taken by the man interviewed. It should be borne in mind that the field representative is probably the only person in the Ethyl Gasoline Corporation with whom the jobber will have contact, and it is on his actions that the jobber will base his impressions of our company. It is essential that whether a License Agreement is issued or not that we have the good-will of the jobber. The person contacted should be the one signing the application, the owner or operating manager of the company. A private interview is desirable but should not be made to appear necessary. A talk with the jobber discussing the general marketing conditions in the territory, and the general business of the jobber will place the interview on a friendly basis and at the same time give the field representative a chance to gain a first impression of the man he is to deal with. The information required to make up the Jobber Information Report should be obtained indirectly, except where direct questioning is necessary to obtain required facts. Under no condition should the Jobber Information Report blank be shown to the jobber. On the question of business ethics, conversation will vary according to the type of man interviewed. Care should be taken not to mention the source of information if undesirable conditions are called to the attention of the applicant in order to gain an explanation or refutation. Where necessary, our standing of business ethics should be described as believing in and supporting, where possible, the National Code of Practices for Marketing Refined Petroleum Products. Before leaving the jobber, regardless of whether a favorable or unfavorable report is to be turned in, the representative should explain the story of Ethyl Gasoline, as all oil men, whether marketing our product or not, are constantly being asked about Ethyl

men interested in it. Where it can conveniently be done, a reading of the Articles of Incorporation of the company give accurate information as to how the business may be conducted. Calls at the offices of oil associations, jobber associations, Regional Code Offices or other organizations of a like nature will often yield information otherwise unobtainable. If the jobber has advertised in local newspapers, a search through the files of the newspaper office will give a good indication of the type of business conducted in the past.

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for the field representative to have Ethyl primers available and to leave several of these with the man interviewed.

In the case of a jobber to whom it is believed a License Agreement will be issued, provisions of the License Agreement should be carefully explained, going over in detail the privileges and duties which the holding of a License Agreement entail.

The placing of warning signs on pumps dispensing Ethyl Gasoline should be clearly understood and the necessity for these signs fully appreciated by the jobber. The handling of Ethyl Gasoline should be explained and the jobber cautioned against allowing any form of dilution to occur.

A short sales talk giving the reasons for and the method of pushing the sale of Ethyl Gasoline should be outlined in order that immediately on placing Ethyl Gasoline on the market, the jobber will be informed of the most advantageous manner of selling. The profit to the jobber for diligently pushing the sale of Ethyl Gasoline should be stressed and examples sited of other accounts who have sold a high proportion of Ethyl Gasoline. If the jobber has a business of sufficient size and is willing to cooperate with us and will make the necessary arrangements for the holding of a meeting and demonstration, tentative arrangements may be made for such a meeting at a later date, the meeting of course to be held only in the case a jobber License Agreement is issued.

The field representative should be sure to advise that the final disposition of the License Agreement is in the hands of the New York office, and during the interview should refrain from making any statement which might be taken to construe that License Agreements would be either executed or rejected.

INSPECTION

Either before or after the interview with the jobber a number of company owned service stations and dealers should be inspected to gain a thorough knowledge of their appearance and character. Bulk plants should also be inspected in company with the person interviewed and any recommendation as to the change in piping arrangements should be made at that time. Care should be taken, however, in wording the recommendation so that the jobber will not go to the expense of making changes under the impression that License Agreements will be executed if such changes are made. The recommendation should be stated in such a manner that when License Agreements are executed the piping lay-out should be altered to avoid any mixing of Ethyl Gasoline with other products. In the case of a supplementary investigation where the jobber is handling Ethyl Gasoline, the Ethyl pumps should be inspected for proper markings and if believed advisable samples taken.

JOBBER INFORMATION REPORT

After the investigation the information procured should be entered in a notebook for reference at the time of making out the Jobber Information

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JOBBER INFORMATION REPORT

After the investigation the information procured should be entered in a notebook for reference at the time of making out the Jobber Information Report. The report itself should be written the same day the investigation is completed and forwarded promptly. Any benefit occurring from a prompt investigation is of course lost if the report is not received in the New York

office soon after the investigation. The actual writing of the report should be done in a very careful manner. First, in order that License Agreements submitted may be handled correctly and second, in order that reliable information on the jobber will be available in the file.

The two boxes at the top of the sheet marked "Supplementary Investigation" and "Original Investigation" denote whether the jobber has ever been called on previously. If it is the first contact made by any member of our organization, of course a check is to be inserted in the Original Investigation box. If the jobber has been called on by an Ethyl Gasoline representative, regardless if the representative making the report has not called before, the Supplementary Investigation box should be checked.

The first line with blanks for Division, Headquarters and date is self-explanatory.

The blanks with the name of the jobber should be filled in with the names as given on the investigation request. If there has been any change in the name of the company, or if the name as given by the refining company is incorrect, or no longer applies, the correct name should appear directly after in parenthesis.

Address - give street, town and state of the office of the jobber.

Has jobber been issued License Agreement - if the jobber holds a License Agreement, or held a License Agreement at any time a mark is to be placed over the "yes", and if possible, the brand name of the Ethyl Gasoline covered by such License Agreement. If no License Agreement has been issued a mark over the "no" will suffice.

Jobber has not applied for License Agreement - if the jobber has applied for a License Agreement the "not" is to be crossed out and the brand name of the Ethyl Gasoline applied for is to be written in the space following the statement. In the case of a supplementary investigation where there is no change in the License Agreement, or in the case of an investigation of a jobber not handling Ethyl Gasoline nor wishing to handle Ethyl Gasoline, the blank may be left open.

White gasoline supplied by ....Brand....Tank car or Tank Wagon - give information as to the gasoline being marketed at the time of the investigation, not the manner or brand of gasoline to be marketed in the future.

The lines covering the premium gasoline and the Ethyl Gasoline are to be filled in in the same manner as the spaces for white gasoline.

Gallonage for one year preceding investigation - this information is important and care should be taken to see that the information given is correct. Where a jobber has not been in business for an entire year, any gallonage figure that can be obtained, together with the period of time this figure covers, will be a great help in making a final decision as to the issuance of a License Agreement.

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How long has jobber been in gasoline business (approximate) - this is self-explanatory with the exception that if the jobber is just starting

the wholesale purchasing of gasoline and has been operating as a dealer, the period of time covered while operating as a dealer should be noted.

Bulk plants - give number and location and if all are not to bulk Ethyl Gasoline, note this in some manner.

Company owned service stations ....number....General Appearance - the appearance is the average of all the stations compared with the type of stations found in the same locality.

Dealers....Number....General Character - the character applies to whether they are service stations; curb pumps, garages or automobile dealers and their desirability.

Does jobber deliver by tank wagon to consumers - in other words, does jobber deliver in his tank wagon to farmers, commercial accounts or private accounts for use exclusively by the purchasers.

Condition of Ethyl pump markings - this will apply to jobbers who are handling Ethyl Gasoline and can be answered only if the equipment has been inspected.

If jobber contracted for Ethyl Gasoline supply and Expiration Date- this information can be obtained from the jobber at the time of the interview with him.

Present percentage Ethyl sales to total sales - this of course applies to accounts handling Ethyl Gasoline and is self-explanatory. If the jobber is doing a large commercial business, the percentage of Ethyl sales to total sales at the bulk plant and the percentage of Ethyl sales to total sales for retail trade should be given.

Have jobber's employees full knowledge of Ethyl Gasoline;
Would Ethyl demonstrations aid jobber and employees - the answer to these two questions is left to the judgment of the field representative and should be answered after talking with the jobber and a portion of his employees. Information as to whether a jobber would be willing to carry the expense and the work of arranging a satisfactory meeting should be obtained and also whether it would be worth the expense and the time of the field representative to give such a meeting.

Does jobber push sale of Ethyl Gasoline - if a supplementary investigation, this question can be answered by comparing the percentage of sales of the jobber with the average for the state; also, by stopping in one or more of the service stations supplied by him and noting the attendants' attitude toward the sale of this product. In an original investigation the field representative can give his impressions as to whether the sale of Ethyl Gasoline will be pushed by the jobber.

Reputation in Trade - this is the concensus of opinion of the marketers who are marketing in competition with the jobber. These opinions are obtained at the time of the field representative's call on the various competing marketers.

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Business Ethics - this question can be answered only if the field representative has obtained sufficient information to be sure of his opinion.

Ethics of the jobber is based on the territory in which he is marketing and the conditions surrounding the sale of gasoline by other Ethyl Gasoline distributors. Care should be taken, if possible, to find out the instigator of any practices which tend to unfair competition. Business Ethics is a relative quality and no hard and fast rule can be given to govern all cases. Information given to field representatives and picked up in the various contacts should be weighed carefully before a final decision is reached. One of three words - Good...Questionable...or Unethical is to be used in answering this question.

Jobber visited last on....Reported last on - this cannot be given in all cases, but an attempt should be made however to find the information desired. Where a field representative has been in the territory for some time this information should be available.

The reverse side of the report is to be used to give any information pertinent to the investigation which is not covered by the questions. Information such as special accounts supplied by the jobber, past history, number of companies selling Ethyl in the same territory, brand of white gasoline, premium gasoline and Ethyl Gasoline to be marketed and kindred subjects, location of the nearest bulk plant handling the brand of Ethyl Gasoline applied for, if the Ethyl gallonage of the jobber is small, should be given. If a sample of Ethyl Gasoline has been taken, and submitted as a Class II sample, this information should also be noted. In some cases it is advisable to attach a supplementary letter to the report giving information that will be of value in making a decision as to the issuance of a License Agreement.

SUPPLEMENTARY INVESTIGATIONS

The same general procedure of investigation and writing of the report is to be used in an original or a supplementary investigation. If a reinvestigation is requested due to either disagreement by the refining licensee with our decision, or due to insufficient information on which to base a decision, the reinvestigation should be complete, not omitting any source of information. It is especially important that all investigations be conducted carefully in order that additional investigations will not be necessary.

Supplementary investigations should be made periodically and reports sent in. This will allow the field representative to better organize his work in that investigations will not be requested if an up-to-date report is in our file, thus allowing any special or routine work to be carried on uninterrupted.

SALES PROMOTION CALLS

If a License Agreement is issued a call on the jobber going over the License Agreement, our requirements as to the pump markings and strongly cautioning against dilution will often save considerable time and expense later. At this time again impress on the jobber the advantages of Ethyl

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Frequent calls on our licensed jobbers to discuss with them new developments in the automotive world and the advantages in pushing the sale of Ethyl Gasoline, will materially increase the Ethyl gallonage of these accounts; also, such calls will enable the field representative to make sales promotion contacts which otherwise might be missed. The average jobber does not have as complex an organization as our major refining companies, and sales promotion efforts will be more quickly felt and in many cases more effective. The selling of jobber accounts on the advantages in pushing the sale of Ethyl Gasoline is one way that the field representative can increase the percentage of Ethyl Gasoline sales to total gasoline sales in his territory.

REJECTED ACCOUNTS

The field representative in traveling through his territory should bear in mind the various accounts which have applied for License Agreements but for some reason have been rejected. In many cases the rejection of License Agreements and the subsequent interest taken in the account by the prospective supplier will change the marketing operations of a jobber sufficiently to justify the issuance of a License Agreement; also through work on the part of our field representatives some accounts will improve and become assets in the marketing of Ethyl Gasoline.

CONCLUSION

The investigation of jobber accounts is not a routine business each case has its peculiar twists and on the field representative's initiative and good judgment depends the type of jobbers licensed and the amount of good accomplished. Investigations should be treated as a means of obtaining information not only on the jobber involved, but on the marketing of all companies in the territory, and also, as the means of promoting the sale of Ethyl Gasoline. How the work is done is in a large measure left in the hands of the field representative and his ability to get the facts and correlate them is shown in the jobber report submitted. Jobber investigations are important and on the field representative's ability to do this work is based, in part, his standing in the Ethyl Gasoline Corporation.

December 1, 1931

ETHYL GASOLINE CORPORATION

ROUTINE TO BE FOLLOWED IN THE COLLECTION AND IDENTIFICATION OF SAMPLES

The collection of field samples for test purposes at our laboratories is one of the most important duties of the field representative. By this means we are able to judge whether our licensees are sending from their refineries Ethyl Gasoline which meets our anti-knock standard. We can determine, if such Ethyl Gasoline left the refinery meeting our standard, whether it was diluted in the field. We can at all times through sample testing be in a position to know the quality of premium products competing with Ethyl as well as the quality of non-premium gasolines marketed by our customers and their competitors.

We are able to arrive at these conclusions only if this work from start to finish is correctly carried out. The first thing of importance is judgment on the part of the field representative as to where he shall collect samples. After taking the sample he must be careful to properly identify it before shipping to the laboratory. Then the sample reaches the laboratory it is subjected to all routine tests as well as specific tests requested by the field representative. The results of these tests are carefully tabulated in reports which come to the New York Office and in turn go back to the division manager and the field representative.

Since these instructions deal only with the collection of samples we need not discuss testing of the gasoline at our laboratories. We wish, however, to impress upon all field representatives that our laboratories have built up an elaborate system where gasoline testing has reached a high degree of accuracy. They have but one job toward which all their efforts are devoted and it is only reasonable to conclude that they should and do excel in the testing of gasoline. Every field man can without qualification accept the tests of our laboratories as true results on the gasolines which are submitted to them.

CLASSIFICATION OF SAMPLES

We have classified routine samples sent in by field representatives under four separate and distinct classes. Each of these represents a particular type from which certain information may be drawn. All field samples should therefore fall within one of the four following classes.

CLASS I - ROUTINE SAMPLES WHICH ARE PICKED UP TO GIVE US GENERAL INFORMATION ON THE QUALITY OF ETHYL GASOLINE AS SOLD BY OUR LICENSEES

Class I samples are those samples which are taken at random but which are believed to be samples typical of particular brands of Ethyl Gasoline. Class I samples may be further broken down into three groups, namely, those taken from

one of the most important duties of the field representative. By this means we are able to judge whether our licensees are sending from their refineries Ethyl Gasoline which meets our anti-knock standard. We can determine, if such Ethyl Gasoline left the refinery meeting our standard, whether it was diluted in the field. We can at all times through sample testing be in a position to know the quality of premium products competing with Ethyl as well as the quality of non-premium gasolines marketed by our customers and their competitors.

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company owned stations of our refining licensees, those taken from dealers supplied directly by our refining licensees and those taken from jobbers or jobbers' dealers. We may regard the samples taken from refiners' company owned outlets as our key samples of Class I. These are the most important in judging the quality of the Ethyl Gasoline as emanating from the refinery. These routine samples taken from refiners' dealers and jobbers will act as supplementary information to that which is gained from key samples.

Class I samples are the most important group of samples which are requested. These give us the knowledge on how our refining customers are maintaining our standard; whether their gasoline is above our standard and if it is a stable gasoline which continues to hold its anti-knock value after lengthy storage in the field. These samples also give us our first indication of dilution by any particular marketer.

The field representative will be instructed from time to time by his division manager, the number of Class 1 samples, by brand, which should be taken from company owned stations, from dealers and from jobbers.

CLASS II - SAMPLES TAKEN BECAUSE OF SOME SPECIFIC SUSPICION OR COMPLAINT, SUCH AS SUSPECTED DILUTION, COMPLAINTS ON ANTI-KNOCK VALUE, COMPLAINTS ON POOR STARTING, ETC.

The definition of Class II samples is self-explanatory and samples should be placed therein if there is any suspicion of the gasoline. IT IS IMPORTANT THAT THE FIELD REPRESENTATIVE SHALL NOTE ON HIS REPORT THE REASON OR REASONS FOR PLACING A SAMPLE IN CLASS II. For instance under remarks he should note "Suspected Dilution", "Complaint on Knocking", "Complaint on Starting", etc. It is also important that the field representative note on the sample report any specific tests which he thinks should be run. For instance he should request (under remarks) "Distillation", "Lead Analysis" or "All Tests". He should not request "All Tests" unless it is necessary to have these results for a definite purpose in mind. Class II samples will be given preference at time of testing. In other words, our laboratories will expedite tests on this type of sample so that the results obtained therefrom may be reported back to the division manager and thence to the field representative at the earliest possible moment.

CLASS III - SAMPLES COLLECTED ON SPECIFIC INSTRUCTIONS FROM NEW YORK OR FROM A DIVISION MANAGER

The definition of this class is self-explanatory. Samples will be requested from time to time by the division manager when particular campaigns are put on to determine certain characteristics of any type gasoline. Instructions to the field representative to collect a given number of such samples will have no bearing whatsoever on samples of other classes but will be picked up at the direction of the division manager. THE FIELD REPRESENTATIVE SHOULD NEVER COLLECT OR IDENTIFY SAMPLES AS CLASS III AT HIS OWN DISCRETION. SAMPLES SHALL ONLY BE IDENTIFIED AS CLASS III WHEN SPECIFIC INSTRUCTIONS FROM THE DIVISION MANAGER HAVE BEEN GIVEN TO PLACE THEM IN THIS CLASS.

NOTE: Classes I, II and III refer to samples of Ethyl Gasoline.

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NOTE: Classes I, II and III refer to samples of Ethyl Gasoline.

CLASS "C" - SAMPLES PICKED UP TO DETERMINE THE QUALITY OF COMPETITIVE PREMIUM GASOLINES AND/OR NON-PREMIUM GASOLINES SOLD BY OIL COMPANIES WHO MAY OR MAY NOT BE LICNESED TO MARKET ETHYL GASOLINE

e must at all times know the quality of all gasolines which compete with Ethyl. This applies not only to premium gasolines but non-premium gasolines as well. The field representative will be instructed from time to time by his division manager the number of "C" samples which shall be picked up as a routine duty. He may, however, at his own discretion collect a sample occasionally when he may come in contact with any product of supposedly high anti-knock value. When any samples are collected by the field representative on his own initiative he shall make a separate report to his division manager on the sample.

REGULARITY OF SAMPLE SHIPMENT

The laboratories of the Ethyl Gasoline Corporation have been designed and are manned to test a certain number of samples. For their efficient operation it is important that samples be sent in at a uniform rate. If this is done they will be busy at all times rather than having more samples than they can test on one day and fewer than they could test on another day. For this reason it is of utmost importance that field representatives ship their samples on the day those samples are collected. This should be strictly adhered to and each field representative should set for himself the day on which particular samples will be taken. We mean that as nearly as possible the field representative should consider the total number of samples which he must collect each week and time the shipment of these samples at regular intervals so that there will be a constant flow of samples to the laboratories. The tendency of any representative to minimize the importance of regular shipment of samples, will place such field representative open to serious criticism.

SAMPLE REPORTS

Prior to these instructions the sample tag has been the only means of identification of the sample. This method was found to be objectionable due to obliteration during shipment, of the identification marks on the tag. Under this system it was also necessary for the field representative to make a report to his division manager on the samples which he collected. A new system has been devised for identifying samples for the laboratory and reporting them to the division manager which should overcome all present objections.

Each representative will be supplied with a pad of reports entitled "FIELD REPRESENTATIVES SAMPLE REPORT". The form of this report is attached hereto. These forms will be made up in quadruplicate with pages colored white, blue, pink and canary yellow in accordance with our standardized color scheme on reports. The white copy is to be retained by the field representative. The yellow copy will be mailed by the representative to the laboratory to which the sample is directed immediately upon collection and shipment of the sample. The pink and blue copies will be mailed to the division manager. Forwarding the division manager's copies to him will be the

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The tag attached to the sample at time of collection need only contain the sample number and the name of the field representative. IT IS IMPERATIVE THAT THE FIELD REPRESENTATIVE MAKE SURE THAT THE NUMBER ON THE SAMPLE TAG COMPARES EXACTLY WITH THE NUMBER ON THE SAMPLE REPORT. If the number on the sample tag does not compare with the number on the sample report, the sample is misidentified and is worse than worthless to us.

The information requested on the sample report follows closely the information required prior to this time on the sample tag. We will go over each blank on the report, however, so that each field representative may fully understand the information which is necessary.

Division	Self-explanatory
Date Shipped	Self-explanatory
Sample Number	Self-explanatory
Brand Name	Self-explanatory - In reporting "C" samples (not Ethyl Gasoline) strike out the word "ETHYL" on the report.
Blending Company	The blending company is that company which manufactures the Ethyl Gasoline. It is possible that one of our refining licensees may purchase Ethyl Gasoline manufactured by another refining licensee, but in this space should be recorded the name of the oil company which actually manufactures the gasoline. In most cases the blending company is that company whose brand is used but there may be exceptions to this.
Refinery Location	After a field representative gains sufficient knowledge of activities in his territory he usually knows the refinery from which each particular brand of Ethyl Gasoline is shipped but this information may be obtained from the proper representatives of the company whose brand is used.
Marketer (Wholesaler)	The marketer represents the company who handles the gasoline in the locality in bulk quantities. In the case of a refining licensee the marketer may be the company whose brand occurs above. It may or may not be the company which manufactured the Ethyl Gasoline or it may be a jobber.
Pump Owner (Retailer)	This should give the name of the company or individual retailing the gasoline. It may be a refiners company owned station, a jobbers company owned station or a dealer of either a refining licensee or a jobber licensee.

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Location	Self-explanatory
Town and State	Self-explanatory

Class	The sample should be classified in accordance with instructions and the number or letter noted. In other words the sample should be classified as "I", "II", "III" or "C".
Reason for Classification	If a class I sample it will only be necessary to write "Routine" as reason. If Class II the reason for suspicion should be given. If Class III should simply be noted as "Requested' giving the date of the request. If Class "C" it should be listed as routine unless the sample has been picked up at the discretion of the field representative. If this has been done the representative should give the reasons for his collection of the sample.
Shipped to	Give the location of the laboratory to which the sample is shipped.
Remarks	Give any special tests to which sample should be subjected or any other remarks having to do with the sample.
Signed	The field representative's signature.
Laboratory Report	This space has been allowed so that the field representative may note upon his records the results which were obtained by the laboratory on the sample. He will receive statements from time to time from his division manager on the results of the samples he has collected and these should be noted in this space provided for the laboratory report.
	The reverse side of the sheet should be used for any additional remarks to be made to either the laboratory or the division manager and the representative making out the report should write "Over" at the bottom of the page.

If a field representative is in doubt as to any of the statements occurring in these instructions he should immediately write his division manager for a more detailed explanation.

These instructions are dated December 1, 1931, and supersede any instructions relating to samples given prior to this date.

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EXHIBIT 17-D

PAPER NUMBER I

JOBBERS

The purpose, procedure routine instruction for the handling of jobber work by the field representative is fully covered in a paper on the subject given in the field representative's manual which was issued by the Sales Department in December of 1931. As we review the jobber picture during the year of 1932, we find that there are no additions or corrections to the instructions set forth in the manual. We do feel however, that not only the field representatives, but the division managers themselves, should make a practice of reading the jobber procedure at least once every three or four months so that they may keep themselves familiar with the points contained therein, which in some cases have not been followed to the letter during the past year.

Because there are no additions or corrections to procedure, as stated a year ago, we may devote our entire time to refinements of the handling of jobber licences.

LACK OF INFORMATION

The activities of our field representatives in the investigation of jobbers still leave much to be desired in the manner in which their reports are made out. It is entirely possible that investigations are made in accordance with our instructions but if the investigation itself is properly made it is not reflected in the report of the field representative to his division manager. Reports continue to be received in the New York Office which are not completely filled out. Many times pertinent information which might be the deciding factor in the handling of a jobber application has not been covered by the field representative. Certain divisions have demonstrated that their representatives have been able to secure all of the information requested on the jobber investigation report and as far as the Sales Department is able to determine there is no reason why every blank space on the jobber report should not be fully made out by the field representative. All of the information requested is available to the investigator if he will take the time to secure it.

SUPPLEMENTARY REMARKS NECESSARY

Even a greater omission on the part of certain field representatives in making jobber reports is the fact that they give little or no supplementary information other than that requested on the report itself. This information is most always of a very helpful nature to the New York Office in deciding whether or not a jobber license will be issued. We want every field representative to note under remarks on his report those things which pertain in any way to the applicant's business dealings,

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We notice that some field men make a practice of commenting on the business ethics of the jobber applicant in their remarks contained on the jobber report. This is unnecessary and undesirable since it is merely a repetition of the facts called for on the face of the report.

SKELETON REPORTS NOT ACCEPTABLE

We have noticed during the past few months that a number of our field men have instituted a practice of making out skeleton reports where in their estimation it was not necessary to give full details. By way of example let us suppose that the John Doe Oil Company has discontinued the sale of Ethyl Gasoline. One of our field representatives when calling on the John Doe Oil Company is advised that Ethyl Gasoline is no longer being sold at the jobber's outlets and as a result he sends to us a report bearing nothing but the name of the company and the statement that the John Doe Oil Company has discontinued the sale of Ethyl.

It should be almost obvious to both the field representative and the division manager that this is very much a waste of money. The expense of making the jobber investigation is not justified by the simple remarks that the jobber has discontinued the sale of Ethyl. We want a full and detailed jobber report on every jobber who is investigated. This information is most necessary to keep our files accurate and reasonably up to date at all times.

In the case just mentioned there is no way in which we might have full information if the jobber decided that he desired to resume the sale of Ethyl. A new investigation would be necessary with consequent expense which might have been eliminated.

Every field representative therefore must make a practice of making a full report on any jobber when he is on location. We want this regardless of the doubts he may have on the advisability of reporting fully.

CLARIFY METHOD OF DELIVERY

Many times during the past year it has been necessary to carry on correspondence with our division office and in some cases from the division office to the field representative, because the method of delivery by which a jobber secures his Ethyl Gasoline has not been clarified in the report. The field representative should state how the jobber expects to purchase his supplies of Ethyl Gasoline, on all original investigations and he should state how it is being purchased on all supplementary investigations. He should first of all mention whether supplies are being purchased by full or compartment cars. In the absence of car lot purchases he should state whose tank truck supplies Ethyl Gasoline to the jobber's

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is to be or is supplied, by his own tank wagon or the tank wagon of a refining licensee or another jobber. You are aware that upon this one fact alone may depend the necessity for a marketer to hold a jobber license. Where a jobber secures his supplies of Ethyl Gasoline by tank wagon it must therefore be noted on the report as to whether he desires to haul the product in his own equipment.

TRUCK AND TRAILER DELIVERIES IN LARGE QUANTITIES

During the past year we have received a number of reports covering the advent of truck and trailer deliveries from refinery to jobbers. Although this is a fairly complicated problem it may be overcome by classifying the manner and circumstances of delivery. First it must be understood that our License and Sales Agreement with refiners states that deliveries of Ethyl Gasoline may be made in tank car quantities to holders of a valid and existing jobber license. Some of the large truck and trailer conveyances which are now being used are certainly to be considered as moving the gasoline in tank car quantities. It shall therefore be our consideration that deliveries by large truck and trailer units may be made only to licensed jobbers. In other words whether the jobber secures his supplies by tank car or truck and trailer unit, the quantities involved are essentially the same and the necessity for licensing are likewise the same.

We have recently had some reports from our field staff that refining licensees are making deliveries of Ethyl Gasoline in large quantities to jobbers who had been rejected for jobber license. These refining licensees apparently looked upon their deliveries by truck as an ordinary tank wagon delivery to a dealer for whom a license is unnecessary.

During the recent A. P. I. Convention in Houston, executives of our company were advised that literally hundreds of jobbers are being supplied with Ethyl Gasoline in large quantities by means of the truck and trailer unit. Our customers stated that not only were licensees making shipment from their refinery or terminal points in their own units but in units owned or leased by the jobber. Some refining licensees are making such deliveries without ever making application for jobber license for the recipient of the gasoline while some are making deliveries to jobbers who have been rejected for jobber license. Undoubtedly this practice if confirmed is responsible for many unethical marketers now handling our product.

As a result of this information we want every division manager upon his return to his division to write to each of his representatives requesting them to conduct a survey immediately on the delivery of Ethyl Gasoline in large quantities to jobbers who do not hold an executed jobber license. We shall expect to receive a full report on this subject from each division manager not later than January 15, 1933.

This practice must be eliminated and our division managers

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This practice must be eliminated and our division managers must fully inform our refining licensees that we consider the quantities involved sufficiently large so that deliveries of Ethyl Gasoline whether

by tank car or large truck units may be made only to holders of a valid jobber license.

INDEPENDENT TRUCKMAN UNDER SEAL REGARDED AS COMMON CARRIER

When Ethyl Gasoline is delivered by truck and trailer unit owned and operated by a refining licensee there is no particular problem involved as this means the delivery is similar to deliveries of Ethyl Gasoline in an owned or leased tank car.

We must then consider the independent truckman who hauls Ethyl Gasoline from the refinery to a jobber outlet or bulk plant. If this truckman secures a quantity of Ethyl Gasoline at the refinery or terminal storage point of the refining licensee and delivers the entire quantity under seal to the outlet or bulk plant of the jobber (whether the shipment be intra-state or inter-state) we will consider the truckman as a common carrier and therefore not eligible as the holder of a jobber license. In cases such as these a division manager shall make certain that delivery is made to the truckman under seal and the product delivered directly to the jobber. If the refinery where the material is loaded is in a different division from that where it is to be unloaded, the division managers should correspond and should advise both the refiner and the jobber that we recognize the truckman as a common carrier but that the product must be transmitted under seal.

RECOMMENDATION

We have reason to believe that since some of our representatives have failed to make recommendations as to the issuance of a jobber license they have intended their statements on business ethics or reputation in trade as a recommendation in itself. This action is certainly not in accordance with the instructions which have been given. The face of the report should be fully made out but the recommendations of the field representative should be given elsewhere.

When statements regarding reputation in trade and business ethics do not agree an explanation should be given to us.

SUPPLEMENTARY REPORTS

CHECK FREQUENCY OF REPORTS

We want first of all to congratulate our division managers and field representatives on the quality and number of supplementary reports

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CHECK FREQUENCY OF REPORTS

We want first of all to congratulate our division managers and field representatives on the quality and number of supplementary reports which have been received in the New York Office during the past six months. The reports have been very good for the most part and we believe that our division managers have now set up proper machinery for checking frequency of reports so that with few exceptions we have at any time most of the

information necessary on any jobber licensee. If any division manager has not set in motion a procedure for checking his field representatives on late reports we urge that this be done at once.

THE SUPPLEMENTARY REPORT IS VALUABLE

From time to time we have heard statements made by field representatives and division managers that the supplementary report required too much time and was not of sufficient value.

After a year trial of this procedure you may rest assured that the New York Office is confident of the value of the supplementary jobber report.

For instance, during the past six months many jobbers in sparsely populated sections have felt it inadvisable to continue the marketing of Ethyl Gasoline. As a result we continued for a month or two to list these jobbers as active marketers of Ethyl Gasoline. Gradually, however, when supplementary reports were made it was possible for us to go on record as to the cancellation of inactive jobber accounts and consequently we believe that our files are almost entirely up to date on that subject.

We have through these supplementary investigations been able to correct the Ethyl marketing picture to a considerable extent and have succeeded in eliminating from our jobber lists some of our former accounts who were not a credit to us as licensees of the Ethyl Gasoline Corporation.

Statements on gallonage and number of outlets have placed us in a position to intelligently correspond with our refining licensees as to quantities of shipments to jobbers as well as methods of delivery. Later on we will discuss the standardization picture generally and will include the subject of maintenance of our specifications among jobbers. You may be sure that the supplementary jobber report has placed us in a position to more carefully follow the activities of a jobber as regards his standardization problems than we would have been under the system used prior to 1932.

The supplementary report has placed the division manager in a position to straighten out many small irregularities which have been noted by field men regarding the use of wrong brands, peddlers hauling from a jobber's storage, etc.

STUDY SUPPLEMENTARY REPORTS FOR IRREGULARITIES

We point out the above facts not merely as reasons why supplementary reports are necessary but to indicate to our division managers the use which is being made of them. Not all of our division [illegible] of these supplementary reports while

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secured as much information as might be possible, we suggest that you watch this matter carefully in the future so that you may secure that information which is available from the field representatives in some divisions and which is used by some division managers to keep our jobber business on a solid foundation. In the last three or four paragraphs just preceding, we have stated that the supplementary report has brought to light many irregularities. We will not attempt to advise a division manager whether such irregularities should be corrected by the field representative, the division manager or the New York Office. Every case must be based on its own merits but we believe the division manager should instruct his representatives that they are normally to correct any irregularities or infractions which may come to their attention. It is also important that such correction be noted on the jobber report. If the field representative is not successful in the correction of irregularities he should place the matter in the hands of his division manager. In most every case it will not be a difficult matter for such matters to be handled to our satisfaction by the division manager but we ask that if any case comes up where full satisfaction is not received, the division manager shall write the New York Office in full detail on the situation.

STANDARDIZATION

It shall be a part of the duty of each field representative to educate our jobbers on the methods of maintaining better standardization among their group. By this we mean that the field representative must impress upon the jobbers within his territory that we are constantly sampling their product and that we have at our disposal facilities for knowing whether their gasoline meets with our specifications. We do not mean by this that any field representative shall attempt to wield a big stick but rather we believe he should discuss with the jobber those questions which are vital to the maintenance of our standard, such as bulk storage piping arrangements, length of storage, quantities of purchases and quantities of deliveries.

PIPING LAYOUTS AT BULK

We will cover this subject more fully in our consideration of standardization of Ethyl Gasoline but we do wish to call to the attention of every division manager the fact that although we have upwards of five thousand jobbers in our list, we have had practically no cases reported to us where piping layouts at jobbers' bulk plants have been responsible for dilution of Ethyl Gasoline. Surely there must be more of these.

The field representative must therefore make it a practice to inspect thoroughly the bulk plant piping arrangement of all jobbers on original investigations and he must make periodic examinations of the bulk plant on every second or third supplementary investigation. This [illegible] new bulk plants or

instruct his representatives that they are normally to correct any irregularities or infractions which may come to their attention. It is also important that such correction be noted on the jobber report. If the field representative is not successful in the correction of irregularities he should place the matter in the hands of his division manager. In most every case it will not be a difficult matter for such matters to be handled to our satisfaction by the division manager but we ask that if any case comes up where full satisfaction is not received, the division manager shall write the New York Office in full detail on the situation.

STANDARDIZATION

It shall be a part of the duty of each field representative to educate our jobbers on the methods of maintaining better standardization among their group. By this we mean that the field representative must impress upon the jobbers within his territory that we are constantly sampling their product and that we have at our disposal facilities for knowing whether their gasoline meets with our specifications. We do not mean by this that any field representative shall attempt to wield a big stick but rather we believe he should discuss with the jobber those questions which are vital to the maintenance of our standard, such as bulk storage piping arrangements, length of storage, quantities of purchases and quantities of deliveries.

PIPING LAYOUTS AT BULK

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The field representative must therefore make it a practice to inspect thoroughly the bulk plant piping arrangement of all jobbers on original investigations and he must make periodic examinations of the bulk plant on every second or third supplementary investigation. This is particularly necessary if a jobber has absorbed any new bulk plants or if he has rebuilt or changed the location of an existing bulk plant.

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DECREASE LENGTHY STORAGE

The field representative must check with the jobber on his length of storage of Ethyl Gasoline as well as the quantities which he purchases. If these are too high by purchase in full tank car they must be reduced to compartment car quantities and if the jobber is not in a position to purchase his supplies in compartment car quantities he should then make some arrangement to secure his supplies in his own tank wagon from a nearby bulk plant of a refining licensee or another jobber licensee.

EDUCATE THE JOBBER

We believe that many times our field representatives are prone to take for granted the fact that jobbers fully understand the deteriorating properties of gasoline. Many of them do not realize that length of storage has any effect on the maintenance of quality. Because of this it must be the duty of the field representative to explain fully to the jobber the things which must be done to maintain quality for his benefit as well as ours.

NOTE SAMPLE TEST RESULTS ON SUPPLEMENTARY REPORT

When samples of Ethyl Gasoline are picked up from jobber outlets for dilution they should be noted on the jobber report. Such action will cause the division manager and the New York Office to check jobber reports against sample reports immediately and will help us in eliminating dilution among jobbers. The field representative should give the laboratory number and the date on which samples are picked up and should by reference to previous supplementary reports give the date and the laboratory number if possible on all previous samples.

SALES PROMOTION

The jobber report requests information as to whether the jobber pushes the sale of Ethyl Gasoline and also if demonstrations or talks would help the jobber and his employees in promoting the sale of his particular brand of Ethyl. We know that many of our division managers make a practice of putting on a demonstration for jobbers and their employees but this is rarely noted on the supplementary jobber report nor do our representatives state whether it has had any effect on the jobber's tendency to push his Ethyl sales. It is true that in general our jobbers' sales are much lower in percentage of Ethyl to total than those of our refining licensees. There is one and only one big reason why this should be true, namely, that the jobber makes no effort to sell or that he does not know how to sell

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sold if the jobber is willing to put forth an effort. Our field men have the advantage of knowing from observation the methods which are most productive of increased Ethyl sales and they should avail themselves of the opportunity to spread the gospel of merchandising to our jobber licensees. Most jobber stations are poorly operated and little effort is put forth to sell any product. Merchandise is bought rather than sold for the most part due to poor direction on the part of the jobber himself. The jobber has neither the intelligence nor the experience to put forth the merchandising ideas introduced by the sales managers of our large refining companies. These ideas are certainly not made known to him by the refining company with which he competes and he is slow to pick up the proper methods of salesmanship from observation of his competitors activities. Our field representatives can and should carry to him their knowledge of the procedure necessary for selling those products which bring the greatest return to him as well as his supplier.

If we are correct in estimating that something around twenty percent of our total Ethyl Gasoline sales is sold by jobbers then we must give a lot of consideration to the efforts which we make to get a jobber behind the sale of Ethyl Gasoline. Remember that in most cases the jobber is his own boss and does not have to have the authority of a board of directors before he institutes a policy favorable to the sale of Ethyl Gasoline. While it is true that the effect of getting one jobber enthused over the sale of Ethyl Gasoline will have practically no effect on our total sales figure we must remember that our two largest refining licensees do not sell a total of twenty percent of our product so that as a group our jobber business is more valuable to us in dollars and cents than the business received from our two largest refining licensees. The field representative, the division manager and the New York Office must realize the importance of our jobber business and we must guard against the tendency of treating our jobber activity as a routine procedure which is necessary but not particularly remunerative to us.

Each jobber who holds an Ethyl license is probably quite proud of this fact. On the other hand we have few jobbers who have any particular kind regards for the Ethyl Gasoline Corporation. Whether this is due to the fact that licenses have been refused to certain jobbers or whether it is due to the activity of our field representatives has never been entirely clear to us. We do feel, however, that many of our field representatives have not taken the proper attitude in dealing with our jobber licensees. We want our men to become friendly with and as far as possible to know our jobber licensees. We must first instill confidence in the jobber and persuade him that we are trying to serve him before we will get far in turning his activity toward the sale of our product. We will again revert to the example of the state of West Virginia where the Ethyl Gasoline Corporation representative is acquainted with not only every jobber but most every jobber employee. He knows most every filling station operator and tank wagon driver and it is most interesting to note the fact that the state of West Virginia has long been a leader in Ethyl Gasoline sales. Let every field repres[illegible]

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office city and let him ask the jobber to stop in and exchange views with us in this office at any time he is in New York. Let us remember that during 1933 we will need the friendship and cooperation of our jobber licensees more than we have ever needed it in the past and let us also remember that within our jobber ranks lies an opportunity for us to increase our Ethyl sales which we have hitherto failed to recognize.

Registered Aug. 5, 1924. **Trade-Mark 187,410**

UNITED STATES PATENT OFFICE.

GENERAL MOTORS CHEMICAL COMPANY, OF MORAINE CITY, NEAR DAYTON, OHIO.

ACT OF FEBRUARY 20, 1905.

Application filed September 24, 1923. Serial No. 186,125.

ETHYL

STATEMENT.

To all whom it may concern:

Be it known that General Motors Chemical Company, a corporation duly organized under the laws of the State of Delaware, and located in Moraine City, near the city of Dayton, county of Montgomery, State of Ohio, and doing business at Moraine City, near the said city of Dayton, has adopted and used the trade-mark shown in the accompanying drawing, for a MOTOR-FUEL COMPONENT, in Class 6, Chemicals, medicines, and pharmaceutical preparations.

The trade-mark has been used continuously in the business of said corporation and of its predecessor General Motors Research Corporation, since April, 1923.

The trade-mark is applied to the goods by means of a label upon which the trade-mark is displayed, and by stenciling the mark on a container in which the goods are shipped.

GENERAL MOTORS CHEMICAL COMPANY,
By FRANK O. CLEMENTS,
Assistant Secretary.

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[fol. 158] EXHIBIT 25-B

Registered Aug. 18, 1925. **Trade-Mark 202,275**

UNITED STATES PATENT OFFICE.

ETHYL GASOLINE CORPORATION, OF MORAINE CITY, DAYTON, OHIO.

ACT OF FEBRUARY 20, 1905.

Application filed April 1, 1925. Serial No. 211,994.

ETHYL

STATEMENT.

To the Commissioner of Patents:

Be it known that Ethyl Gasoline Corporation, a corporation duly organized under the laws of the State of Delaware, located in Moraine City, Dayton, county of Montgomery, State of Ohio, and doing business at Moraine City, Dayton, Ohio, has adopted and used the trade-mark shown in the accompanying drawing, for ANTIKNOCK COMPOUNDS FOR MOTOR FUEL, in Class 6, Chemicals, medicines, and pharmaceutical preparations, and presents herewith five specimens showing the trade mark as actually used by applicant upon the goods, and requests that the same be registered in the United States Patent Office in accordance with the act of February 20, 1905, as amended.

The trade mark has been used continuously in the business of said corporation, in the particular form shown, and applied to the goods in the particular manner indicated, since February 27, 1925.

Applicant is the owner of trade mark registration No. 187,410, August 5, 1924.

The trade mark is applied to the goods by means of labels affixed to the containers for such goods, or in any other suitable manner.

Applicant hereby appoints Browne & Phelps, Second National Bank Building, Washington, D. C., a firm composed of Francis L. Browne and Dudley Browne, its attorneys, to prosecute this application for registration, with full power of substitution and revocation, to make alterations and amendments therein, to receive the certificate, and to transact all business in the Patent Office connected therewith.

[L. S.] ETHYL GASOLINE CORPORATION,
By A. M. MAXWELL,
V. P

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EXHIBIT 25-C

Registered July 13, 1926. **Trade-Mark 215,282**

UNITED STATES PATENT OFFICE.

ETHYL GASOLINE CORPORATION, OF MORAINE CITY, DAYTON, OHIO.

ACT OF FEBRUARY 20, 1905.

Application filed April 1, 1925. Serial No. 211,995.

STATEMENT.

To all whom it may concern:

Be it known that Ethyl Gasoline Corporation, a corporation duly organized under the laws of the State of Delaware, located in Moraine City, Dayton, county of Montgomery, State of Ohio, and doing business at Moraine City, Dayton, Ohio, has adopted and used the trade-mark shown in the accompanying drawing, for ANTIKNOCK COMPOUND, in Class 6, Chemicals, medicines, and pharmaceutical preparations, and presents herewith five specimens showing the trade-mark as actually used by applicant upon the goods and requests that the same be registered in the United States Patent Office in accordance with the act of Febru-

No claim is made to the following words appearing upon the drawing: "Brand of Anti-knock Compound, New York, U. S A.," applicant however reserving its common law rights in the mark as a whole.

The trade mark is applied to the goods by means of labels affixed to the containers for such goods, or in any other suitable manner.

Applicant hereby appoints Browne & Phelps, Second National Bank Building, Washington, D. C., a firm composed of Francis L. Browne and Dudley Browne, its attorneys, to prosecute this application for registration, with full power of substitution and revocation, to make alterations and

ETHYL GASOLINE CORPORATION, OF MORAINE CITY, DAYTON, OHIO.

ACT OF FEBRUARY 20, 1905.

Application filed April 1, 1925. Serial No. 211,995.

STATEMENT.

To all whom it may concern:

Be it known that Ethyl Gasoline Corporation, a corporation duly organized under the laws of the State of Delaware, located in Moraine City, Dayton, county of Montgomery, State of Ohio, and doing business at Moraine City, Dayton, Ohio, has adopted and used the trade-mark shown in the accompanying drawing, for ANTIKNOCK COMPOUND, in Class 6, Chemicals, medicines, and pharmaceutical preparations, and presents herewith five specimens showing the trade-mark as actually used by applicant upon the goods and requests that the same be registered in the United States Patent Office in accordance with the act of February 20, 1905, as amended.

The trade mark has been used continuously in the business of said corporation, in the particular form shown, and applied to the goods in the particular manner indicated since February 27, 1925.

Applicant is the owner of trade mark registration No. 187,410, August 5, 1924.

No claim is made to the following words appearing upon the drawing: "Brand of Anti-knock Compound, New York, U. S A.," applicant however reserving its common law rights in the mark as a whole.

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[L. S.] ETHYL GASOLINE CORPORATION,
By A. M. MAXWELL,
V. P.

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[fol. 160] EXHIBIT 25-D

Registered Mar. 8, 1932 **Trade-Mark 292,242**

UNITED STATES PATENT OFFICE

ETHYL GASOLINE CORPORATION, OF NEW YORK, N. Y.

ACT OF FEBRUARY 20, 1905

Application filed November 11, 1931. Serial No. 321,014.

Q

Brand of Anti-Knock Compound

STATEMENT

To the Commissioner of Patents:

Ethyl Gasoline Corporation, a corporation duly organized under the laws of the State of Delaware, having a business office in the Chrysler Building, in the city of New York and State of New York, has adopted and used the trade-mark shown in the accompanying drawing, for ANTI-KNOCK FLUID, in Class 6, Chemicals, medicines, and pharmaceutical preparations, and presents herewith five specimens (or facsimiles) showing the trade-mark as actually used by applicant upon the goods, and requests that the same be registered in the United States Patent Office in accordance with the act of February 20, 1905, as amended. The trade-mark has been continuously used and applied to said goods in applicant's business since November 9, 1931.

No claim is made to the following words appearing upon the drawing: "Brand of Anti-Knock Compound", applicant however, reserving its common-law rights in the mark as a whole.

The trade-mark is applied to the goods by affixing to the containers a label on which the trade-mark appears, or by printing or otherwise impressing the trade-mark upon the containers in which the goods are shipped or in any other suitable manner.

The undersigned hereby appoints Browne & Phelps, a firm composed of Francis L. Browne, Dudley Browne, Nelson J. Jewett and Thomas L. Mead, Jr., whose postal address is Shoreham Building, Washington, D. C., its attorneys, to prosecute this application for registration, with full powers of substitution and revocation, to make alterations and amendments therein, to receive the certificate, and to transact all business in the Patent Office connected therewith.

[L. S.] ETHYL GASOLINE CORPORATION,
By E. W. WEBB,
President.

UNITED STATES PATENT OFFICE

ETHYL GASOLINE CORPORATION, OF NEW YORK, N. Y.

ACT OF FEBRUARY 20, 1905

Application filed November 11, 1931. Serial No. 321,014.

STATEMENT

To the Commissioner of Patents:

Ethyl Gasoline Corporation, a corporation duly organized under the laws of the State of Delaware, having a business office in the Chrysler Building, in the city of New York and State of New York, has adopted and used the trade-mark shown in the accompanying drawing, for ANTI-KNOCK FLUID, in Class 6, Chemicals, medicines, and pharmaceutical preparations, and presents herewith five specimens (or facsmiles) showing the trade-mark as actually used by applicant upon the goods, and requests that the same be registered in the United States Patent Office in accordance with the act of February 20, 1905, as amended. The trade-mark has been continuously used and applied to said goods in applicant's business since November 9, 1931.

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[L. S.] ETHYL GASOLINE CORPORATION,
By E. W. WEBB,
President.

(1911)

I, JOSEPH F. S. FITZPATRICK, Secretary of State of the State of New Jersey,

Do Hereby Certify, That Ethyl Gasoline Corporation

did, on the thirty-first day of March A. D. nineteen hundred and twenty-eight, in accordance with an Act entitled "An act to protect and secure the rights, property and interests therein of the persons, associations, organizations and corporations adopting and filing the same," approved March fifteenth, one thousand eight hundred and ninety-eight, file and register in my office duplicate copies of a Label or Trade-Mark adopted by the said Ethyl Gasoline Corporation of which the annexed is a true copy.

ETHYL

In Testimony Whereof, I have hereunto set my hand and affixed my Official Seal, at Trenton, this seventeenth day of April A. D. 1928

Joseph F. S. Fitzpatrick
Secretary of State.

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State of New Jersey

I, JOSEPH F. S. FITZPATRICK, *Secretary of State of the State of New Jersey,*

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did, on the thirty-first *day of* March *A. D. nineteen hundred and* twenty-eight, *in accordance with an Act entitled "An act to protect and secure the rights, property and interests therein of the persons, associations, organizations and corporations adopting and filing the same," approved March fifteenth, one thousand eight hundred and ninety-eight, file and register in my office duplicate copies of a Label or Trade-Mark adopted by the said* Ethyl Gasoline Corporation *of which the annexed is a true copy.*

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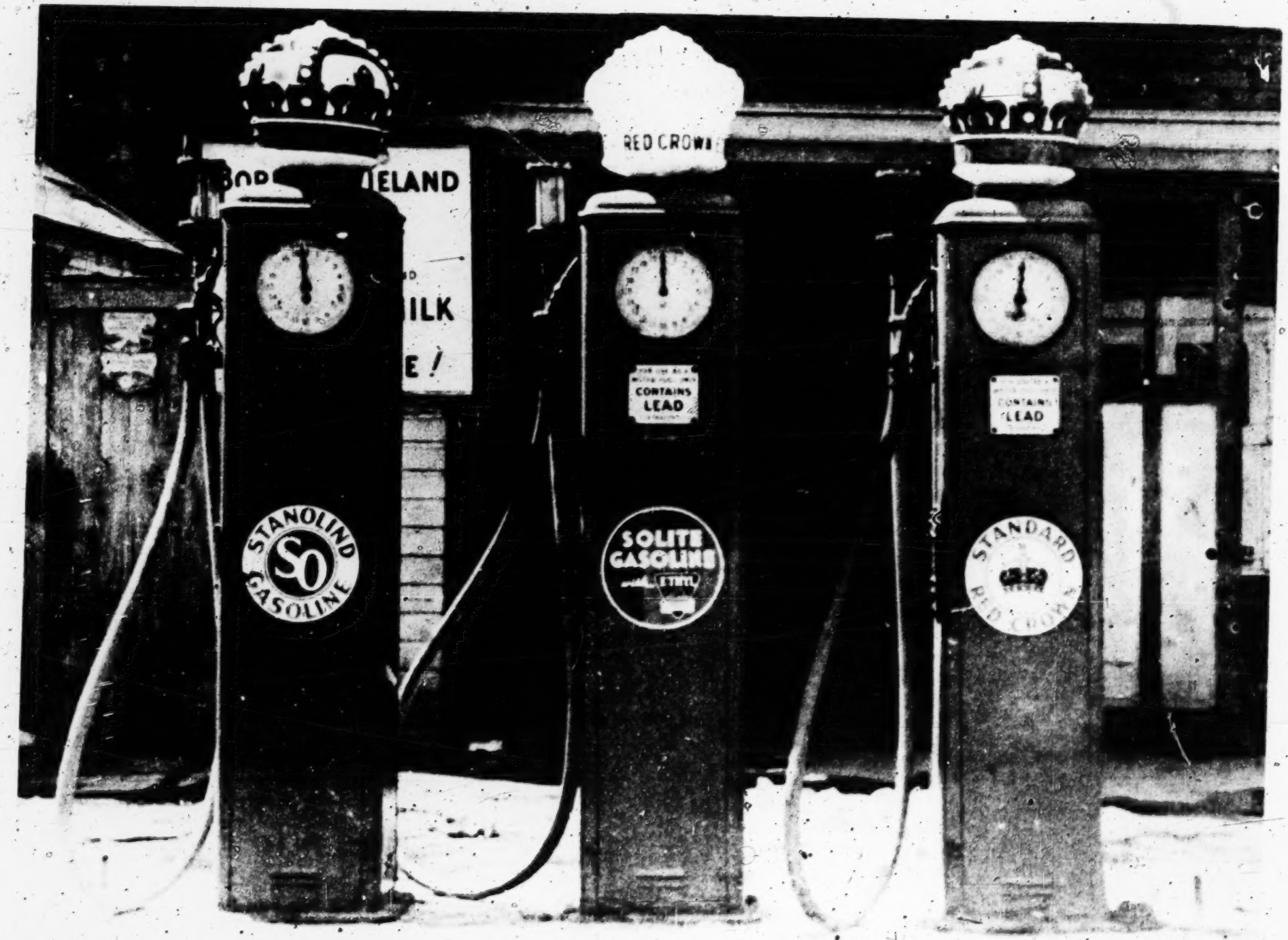
Joseph F. S. Fitzpatrick
Secretary of State.

162-166


RED CROWN
CONTAINS LEAD
STANOLIND GASOLINE
SO
SOLITE GASOLINE
STANDARD
CONTAINS LEAD

ESSO
Essolene
Essolene
LEAD
LEAD
LEAD

EXHIBIT 25-I(7)

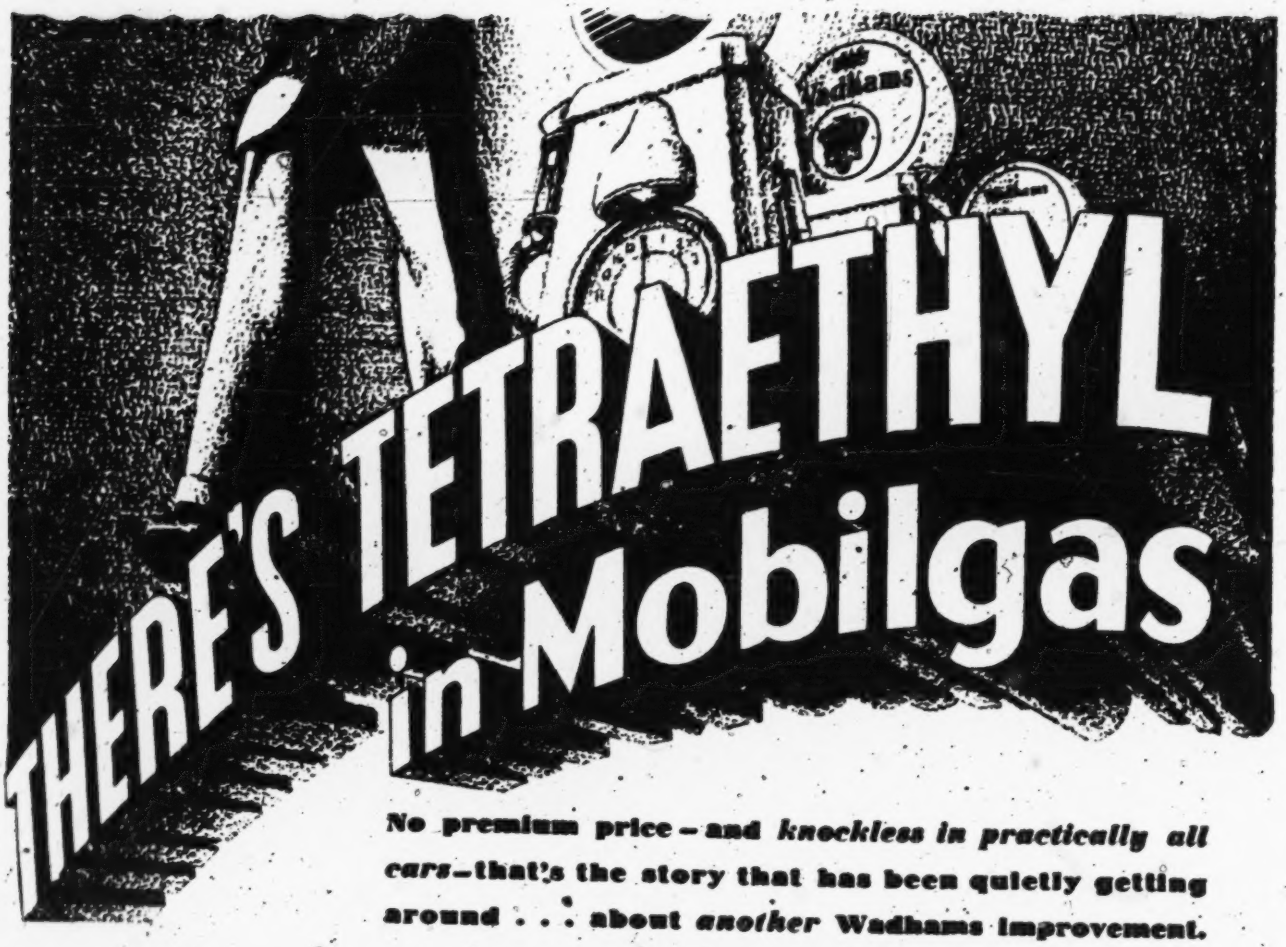
170-173

No premium price – and *knockless in practically all cars*–that's the story that has been quietly getting around . . . about *another* Wadhams improvement.

Now *everybody* knows it . . . there's Tetraethyl Lead in Mobilgas! . . . . On Mobilgas pumps everywhere, you see the white badge of certified Tetraethyl content – the famed ingredient that kills knocks and increases power.

Enjoy knockless power *with* the outstanding speed and mileage economy of Wisconsin's favorite gasoline.

Milwaukee
Central - WSC
29 ch.



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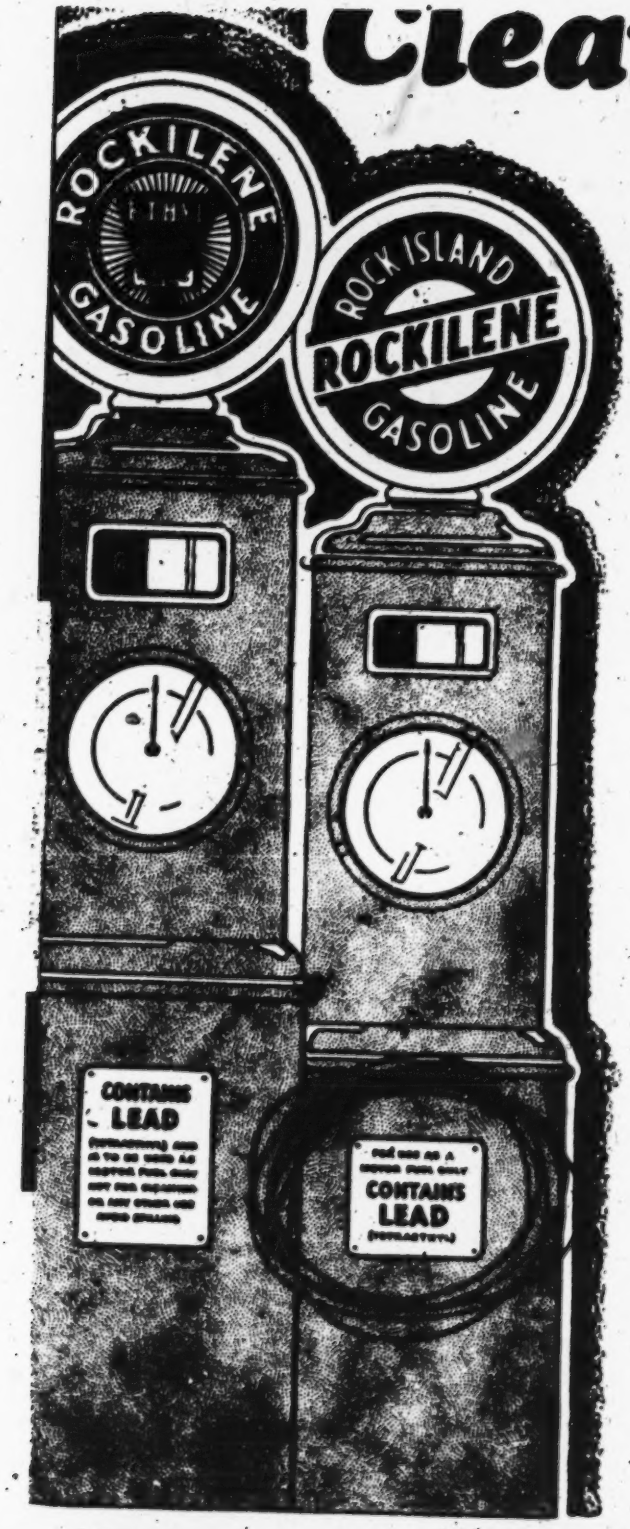
Enjoy knockless power *with* the outstanding speed and mileage economy of Wisconsin's favorite gasoline. Change to "Mobilgas with Tetraethyl". Try a fill today.

Wadhams

A SOCONY-VACUUM COMPANY

Milwaukee
Central – WJC
79 ch.

1938



Clear the Way for 2 new Gasolines!

When the first tank cars of Rockilene Ethyl and Rockilene Golden left the refinery at Duncan on February 10th, a new field of opportunity was opened for the hundreds of independent jobbers who have been our customers.

Our prime purpose is to be in a position to supply our jobbers with leaded gasoline...refined the Rock Island way.

Rockilene Ethyl

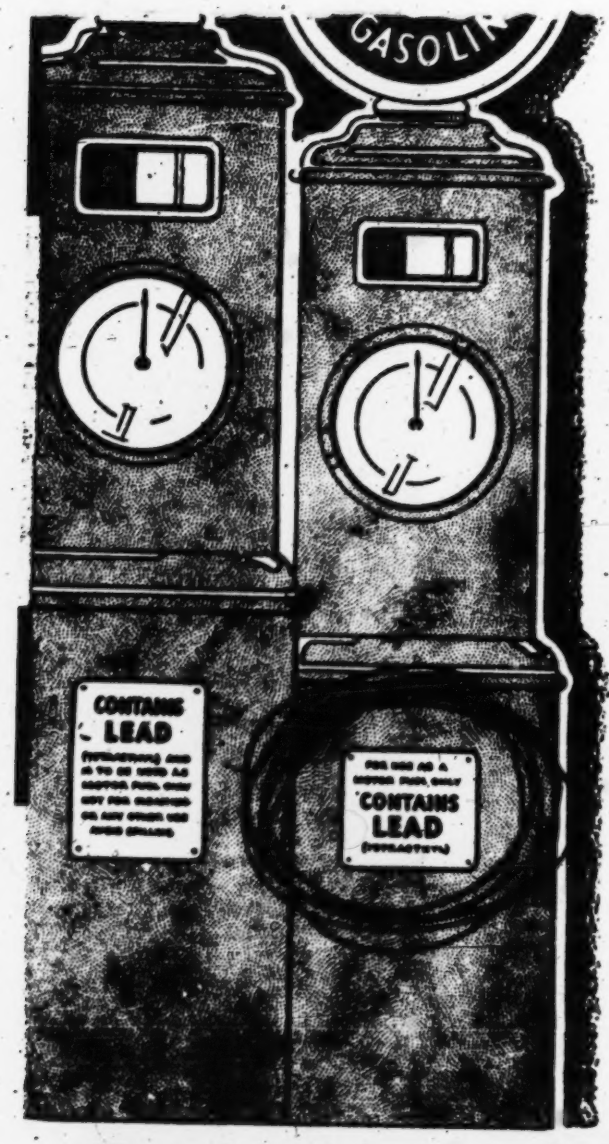
The priceless Ethyl trade-mark now identifies this new Rock Island product. We urge all of our customers who are not yet licensed to sell leaded gasolines to write us immediately.

Rockilene Golden

This new 70 octane gasoline, readily identified by its Golden color...priced to sell in the "regular" price bracket. Special requirements are necessary in handling this gasoline also.

Do not overlook the many attractive features contained in our new 1934 contract. Full information on request.

ROCK ISLAND REFINING COMPANY



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Our prime purpose is to be in a position to supply our jobbers with leaded gasoline . . . refined the Rock Island way.

Rockilene Ethyl

The priceless Ethyl trade-mark now identifies this new Rock Island product. We urge all of our customers who are not yet licensed to sell leaded gasolines to write us immediately.

Rockilene Golden

This new 70 octane gasoline, readily identified by its Golden color . . . priced to sell in the "regular" price bracket. Special requirements are necessary in handling this gasoline also.

Do not overlook the many attractive features contained in our new 1934 contract. Full information on request.

ROCK ISLAND REFINING COMPANY

DUNCAN, OKLAHOMA

174a

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Ex. 25-C (4)

NOW!

INDIAN CHIEF BLUE GREEN

"Double Plus" Gasoline

NO EXTRA COST **WITH** NO EXTRA COST

Tetraethyl Lead and Carbon Removing Compound

No matter if your car is a 1924 or 1934 by using Indian Chief Blue Green "Double Plus" you'll like it better.

Tetraethyl Lead is the finest of all Anti-Knock Fluids. That is one reason why this superb gasoline will give you the performance in your car that you thought was the impossible.

Carbon Removing Compound is the finest carbon remover. It removes the carbon, keeps your valves clean and smooth and in a short time using it you will notice how smooth your car performs.

This "Double Plus" Gasoline cannot be equalled regardless of imitations. You'll like it better.

Drive in at any Independent Station where you see the Indian Chief sign, and fill your tank.

"Double Plus" Gasoline

NO EXTRA COST

WITH

NO EXTRA COST

Tetraethyl Lead and Carbon Removing Compound

No matter if your car is a 1924 or 1934 by using Indian Chief Blue Green "Double Plus" you'll like it better.

Tetraethyl Lead is the finest of all Anti-Knock Fluids. That is one reason why this superb gasoline will give you the performance in your car that you thought was the impossible.

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This "Double Plus" Gasoline cannot be equalled regardless of imitations. You'll like it better.

Drive in at any Independent Station where you see the Indian Chief sign, and fill your tank. "You'll like it better."

Hitchcock Oil Co.

"Boise Owned and Operated"

1741-184 3/1/34

NO EXTRA COST FOR

Tetra ethyl

76

Gasoline

THE HIGHER ANTI--KNOCK LEADER

SF Chron. - 3/30
Seattle Star - 3/29
Oregon Daily Jour. - 3/20
[illegible] - 3/20
[illegible]

Seattle Post-Intelligencer
Mar 20, 1934

With a higher number of NATURAL Anti-knock Fractions plus TETRAETHYL, the New 76 maintains leadership as the West's outanding Quality Gasoline selling at regular gas prices.

INCE Jan. 1, 1932, Union 76 Gasoline has been the generally acknowledged Higher Antiock Leader.

Today Union further cements that leadership giving you 76 plus TETRAETHYL—the antiock ingredient formerly found only in ETHYL solines.

This in addition to the higher PENTANE ntent *(natural higher anti-knock fractions)* for hich 76 is noted.

5 OTHER PREMIUM QUALITIES

And the 5 other premium qualities of 76 are fully retained in this new fuel—

1. **Unexcelled mileage with more reserve power**
2. **NO vapor-lock on warm days**
3. **Greater acceleration**
4. **Faster cold morning warm-up**
5. **Reduced crankcase dilution**

Let the first 76 banner you see remind you to try a tankful of this **advanced** 76. All we ask is that you compare it with any other regular priced gasoline.

UNION OIL COMPANY
A PACIFIC COAST INSTITUTION
OWNED BY OVER 17,000 AMERICANS

Try New TETRAETHYLIZED 76 — The Higher Anti-Knock Leader is the OUTSTANDING quality gasoline sold at regular gasoline prices.

The LEADER 76 GASOLINE

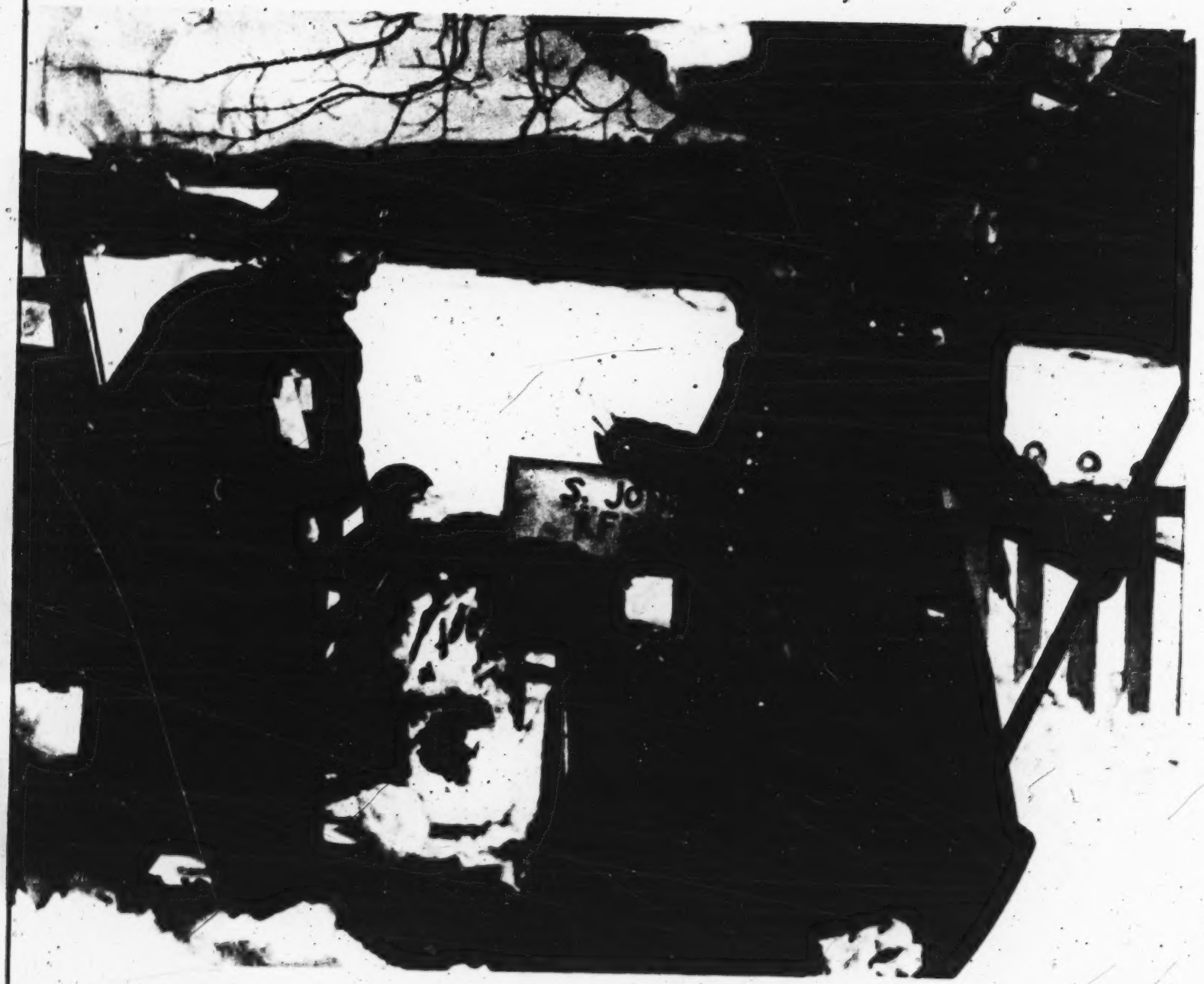
NRA

At all UNION SERVICE STATIONS, INC. and thousands of INDEPENDENT DEALERS

WATCH FOR THIS SIGN ON THE 76 PUMP

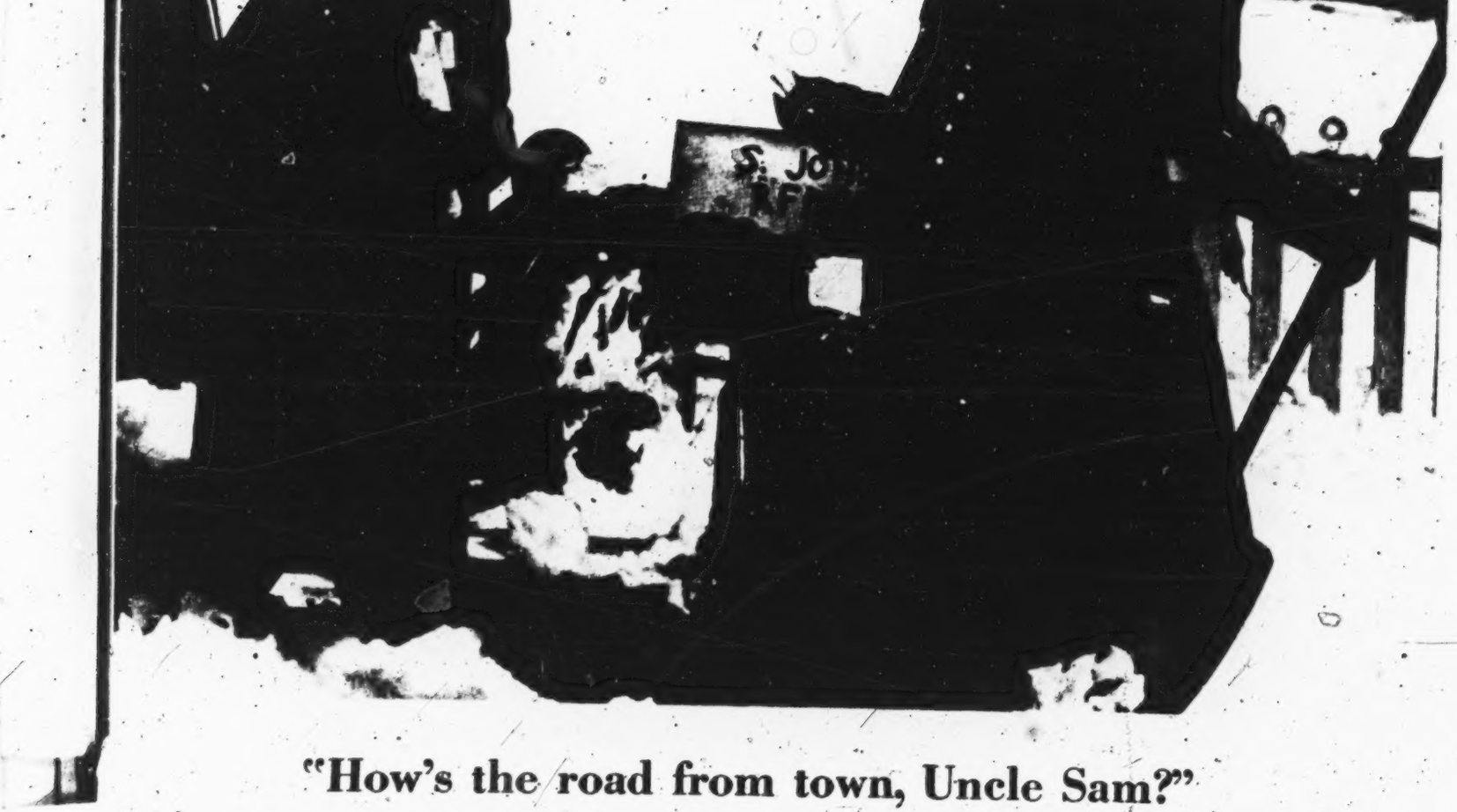
FOR USE AS A MOTOR FUEL ONLY
CONTAINS LEAD (TETRAETHYL)

185-191



"How's the road from town, Uncle Sam?"
"Not so bad—if you've got good winter gas". . .

UNCLE Samuel Simpkins has been delivering mail



"How's the road from town, Uncle Sam?" "Not so bad—if you've got good winter gas". . .

UNCLE Samuel Simpkins has been delivering mail and good advice to the neighbors along his route for nigh on to forty years. So . . .

"What do you mean by 'good winter gas,' Sam?" asks Silas Jones. "Quick-startin'?"

"Yes, but that's only half the story, Si," says Sam. "You've got to get to town *after* your car's started! It takes a heap of *power* to push through snow and slush. Power depends on compression—and the better your gas compresses, the more power you get. That's why I use Ethyl."

EVERY CAR OWNER SHOULD HAVE THESE FACTS:

To increase the compressibility of motor fuel, oil companies use anti-knock fluids manufactured by the Ethyl Gasoline Corporation. They are so effective that most regular and premium gasolines sold in the United States and Canada now contain them.

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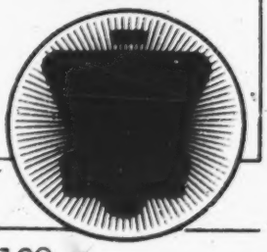
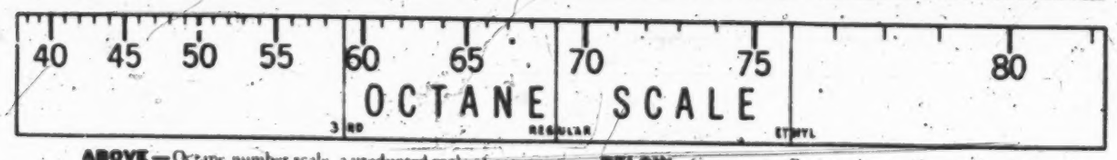


To get ALL the power and pleasure from your car investment— **NEXT TIME GET ETHYL!**

203

Measure the possible compression...

OF YOUR 1935 CAR BY THE OCTANE SCALE



ABOVE—Octane number scale, a graduated scale of gasoline antiknock value—the units of which become increasingly larger—and more valuable—in the higher numbers.

BELOW—Compression Ratio scale, a uniform scale which may be oriented to octane scale for any given engine by determining any two corresponding points.

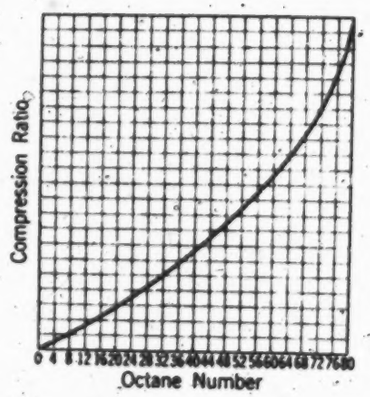
It's not like most scales the divisions become increasingly larger toward the higher end

A FEW YEARS AGO, when all grades of gasoline were in a lower magnitude of octane rating, the variation in the antiknock value of single units of octane number was not of great importance. Today, with all grades of gasoline quality improved—one octane number in any gasoline is much more important than it used to be, and one octane number in today's best gasoline allows more than twice the increase in compression ratio that is allowed by one octane number in the lowest grade.

This is illustrated on the curve at the right and by the two scales at the bottom of the opposite page. The spread between 59 octane and 60 octane gasoline is less than half the spread between 75 and 76 octane.

Compression Ratio Varies by Engine Design

Figures for compression ratios are not given on the compression scale



octane numbers are more valuable than the lower in any engine. All that is necessary to orient these two scales for your engine is to determine the permissible compression ratio for any two octane numbers.

The high reward of high octane is evident. We have drawn a line across the octane scale at the point of 76—the minimum standard of Ethyl Gasoline quality. Another line at the point of 69 indicates the present average quality of leaded regular-priced gasoline (non-leaded regular-priced gasolines are from one to four octane numbers lower gasoline is today about 59—though the variations in octane number among such grades of fuel is extreme.

Measure of Ethyl Value

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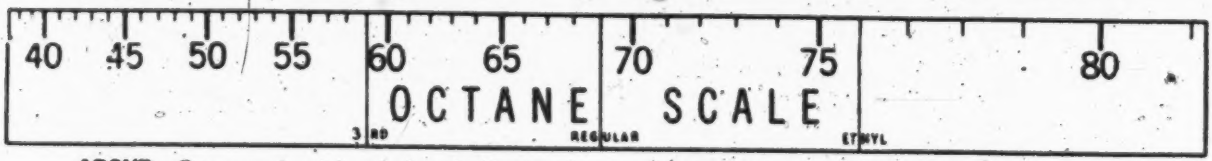

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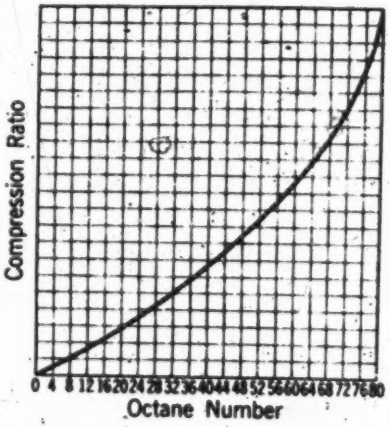

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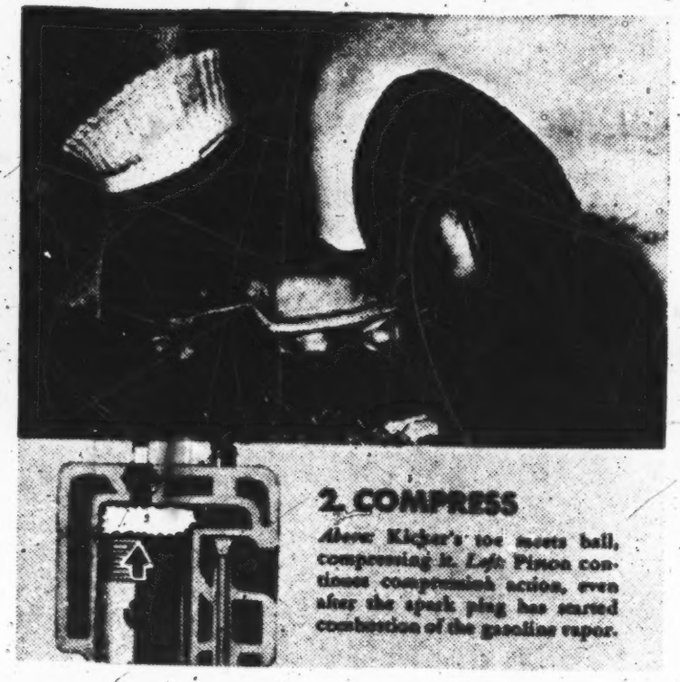
CAMERA CLICKS KICK-OFF IN 1/100,000th OF A SECOND

Pictures below show how Compression means Power in your car's engine, too....

1. READY

Above: Foot swings to compress ball. *Left:* Drawing shows piston in automobile engine cylinder starting upward to compress gasoline vapor in combustion chamber.



2. COMPRESS

Above: Kicker's toe meets ball, compressing it. *Left:* Piston continues compression action, even after the spark plug has started combustion of the gasoline vapor.

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Exhibit 25-H(3)

'leasure the possible compression...

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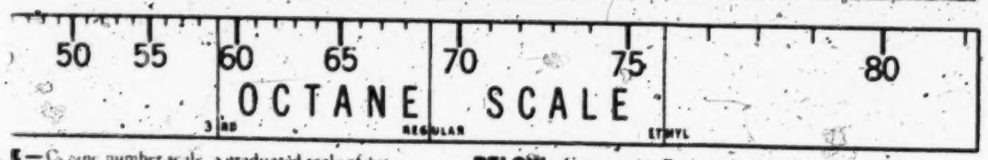

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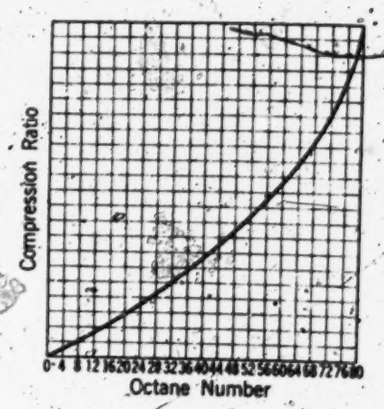

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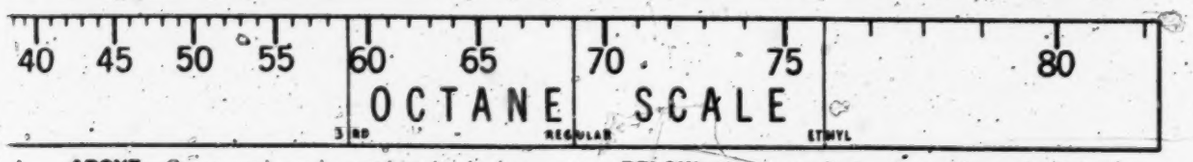

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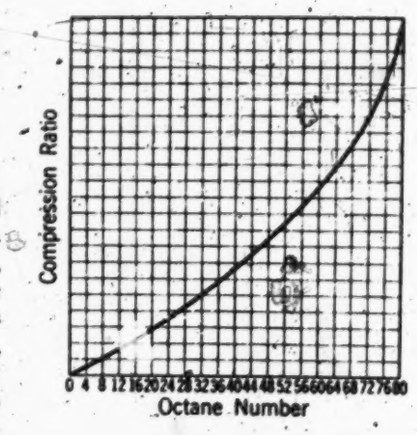

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Advertisement prepared by
Batten, Barton, Durstine & Osborn, Inc.
2 pages—7 x 10
P. O. 4-5371 6-9-20-34

192a-193

EXHIBIT 25-H(8)

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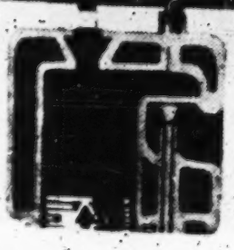

1. READY

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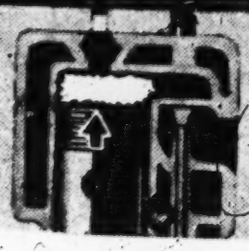

2. COMPRESS

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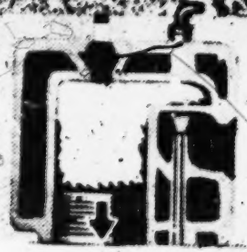

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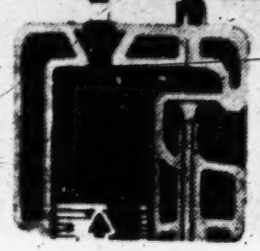

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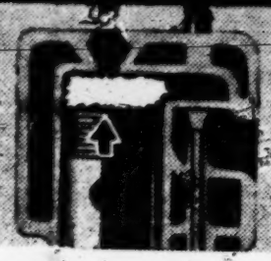

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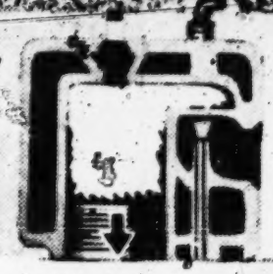

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Rotogravure & B & W Newspapers—November

Advertisement prepared by
Batten, Barton, Durstine & Osborn, Inc.
Size: 2 x 143 lines
Date: 5-4513 Date: 9-24-35

[fol. 195] IN SUPREME COURT OF THE UNITED STATES

STATEMENT OF POINTS TO BE RELIED UPON—Filed Jan. 2, 1940

Ethyl Gasoline Corporation, Earle W. Webb and John Coard Taylor, Appellants in the above-entitled cause, hereby adopt as their statement of points upon which they intend to rely, as required by Paragraph 9 of Rule 13 of the Rules of this Court, their Assignment of Errors filed with the Clerk of the District Court for the Southern District of New York and included by him in the transcript of the record transmitted to this Court.

Dean Acheson, H. Thomas Austern, 701 Union Trust Bldg., Washington, D. C., Attorneys for Appellants.

Service of the above statement of points to be relied upon by Appellants is hereby acknowledged by Appellee this 2nd day of January, 1940.

Grant W. Kelleher, Attorney for Appellee.

[fol. 195½] [File endorsement omitted.]

[fol. 196] IN SUPREME COURT OF THE UNITED STATES

STIPULATION OF PORTIONS OF RECORD TO BE PRINTED—Filed Dec. 18, 1939

The parties to this cause, through their respective attorneys, hereby stipulate and agree that the entire record on appeal shall be printed as filed in this Court with the exception of the Exhibits to the Petition (being Exhibits A, B, C, D, and E thereto) and the following Exhibits to the Stipulation of April 22, 1938 (designated as Item 3 of the Stipulation as to the record on appeal), which Exhibits are to be omitted in printing the record:

Exhibit 6-A, p. 11 (Photograph of mixing plant).
Exhibit 6-B, p. 12 (Blueprint of mixing plant).
Exhibit 23-A, pp. 116-121 (Petroleum Code—Feb. 11, 1929).
Exhibit 23-B, pp. 122-127 (Modified Code—Aug. 10, 1931).
Exhibit 23-C, pp. 128-154 (N. R. A. Code for Petroleum Industry).

Exhibit 23-D, pp. 155-156 (F. T. C. Order—Sept. 5, 1937).
[fol. 197] Exhibit 25-I (1), p. 163 (Photograph of Filling Station).
Exhibit 25-I (2), p. 164 (Photograph of Filling Station).
Exhibit 25-I (3), p. 165 (Photograph of Filling Station).
Exhibit 25-I (4), p. 166 (Photograph of Filling Station).
Exhibit 25-G (1), p. 171 (Advertisements of Licensees).
Exhibit 25-G (2), p. 172 (Advertisements of Licensees).
Exhibit 25-G (3), p. 173 (Advertisements of Licensees).
Exhibit 25-G (5), p. 175 (Advertisements of Licensees).
Exhibit 25-G (6), p. 176 (Advertisements of Licensees).
Exhibit 25-G (7), p. 177 (Advertisements of Licensees).
Exhibit 25-G (8), p. 178 (Advertisements of Licensees).
Exhibit 25-G (9), p. 179 (Advertisements of Licensees).
Exhibit 25-G (10), p. 180 (Advertisements of Licensees).
Exhibit 25-G (11), p. 181 (Advertisements of Licensees).
Exhibit 25-G (12), p. 182 (Advertisements of Licensees).
Exhibit 25-G (13), p. 183 (Advertisements of Licensees).
Exhibit 25-G (14), p. 184 (Advertisements of Licensees).
Exhibit 25-G (16), p. 186 (Advertisements of Licensees).
Exhibit 25-G (17), p. 187 (Advertisements of Licensees).
Exhibit 25-G (18), p. 188 (Advertisements of Licensees).
Exhibit 25-G (19), p. 189 (Advertisements of Licensees).
Exhibit 25-H (1), p. 190 (Advertisements of Ethyl Gasoline Corporation).
Exhibit 25-H (2), p. 191 (Advertisements of Ethyl Gasoline Corporation).
Exhibit 25-H (4), p. 193 (Advertisements of Ethyl Gasoline Corporation).

The following Exhibits to the Stipulation of April 22, 1938 (item 3 of the Stipulation as to the record on appeal) are to be included in printing the record on appeal:

Exhibit 3-A, pp. 1-4 (Patent No. 1,573,846).
[fol. 198] Exhibit 3-B, pp. 5-6 (Patent No. 1,592,954).
Exhibit 3-C, pp. 7-8 (Patent No. 1,668,022).
Exhibit 3-D, pp. 9-10 (Patent No. 1,787,419).
Exhibit 6-C, pp. 13-29 (Regulations for Handling and Mixing Ethyl Fluid).
Exhibit 9-A, pp. 30-36 (Refiner's License and Sales Agreement—Regular).
Exhibit 9-B, pp. 37-46 (Refiner's License and Sales Agreement—Ethyl).

Exhibit 9-C, pp. 47-51 (Refiner's License—non-manufacturing).

Exhibit 13-A, pp. 52-54 (Jobber License—Ethyl).

Exhibit 13-B, pp. 55-57 (Jobber License—Regular).

Exhibit 14-A, pp. 58-64 (Regulation Proposed by Surgeon General).

Exhibit 14-B, pp. 65-68 (Changes in Regulations Proposed).

Exhibit 14-C, p. 69 (Photostat of lead sign—first form).

Exhibit 14-D, p. 70 (Photostat of lead sign—second form).

Exhibit 17-A, p. 71 (Jobbers' Investigation Report Form—First).

Exhibit 17-B, p. 72 (Jobbers' Investigation Report Form—Second).

Exhibit 17-C, pp. 73-106 (Field Representative Manual).

Exhibit 17-D, pp. 107-115 (Supplemental Instructions).

Exhibit 25-A, p. 157 (Trade-Mark Registration No. 187,410).

Exhibit 25-B, p. 158 (Trade-Mark Registration No. 202,275).

Exhibit 25-C, p. 159 (Trade-Mark Registration No. 215,282).

Exhibit 25 D, p. 160 (Trade-Mark Registration No. 292,242).

Exhibit 25-E, p. 161 (New Jersey Trade-Mark Registration).

Exhibit 25-F, p. 162 (New Jersey Trade-Mark Registration).

[fol. 199] Exhibit 25-I (5), p. 167 (Photograph of Filling Station).

Exhibit 25-I (6), p. 168 (Photograph of Filling Station).

Exhibit 25-I (7), p. 169 (Photograph of Filling Station).

Exhibit 25-I (8), p. 170 (Photograph of Filling Station).

Exhibit 25-G (4), p. 174 (Advertisements of Licensees).

Exhibit 25-G (15), p. 185 (Advertisements of Licensees).

Exhibit 25-H (3), p. 192 (Advertisements of Ethyl Gasoline Corporation).

Exhibit 25-H (5), p. 194 (Advertisements of Ethyl Gasoline Corporation).

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Grant W. Kelleher.

December —, 1939.

[fol. 200] [File endorsement omitted.]

Endorsed on cover: File No. 43,943, S. New York, D. C. U. S., Term No. 536. Ethyl Gasoline Corporation, Earle W. Webb and John Conard Taylor, Appellants, vs. The United States of America. Filed November 16, 1939. Term No. 536, O. T., 1939.